THE IRON TRADE REVIEW

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THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

The week has brought added strength to the situation; whatever of easier conditions is to be encountered later on, there is no foreshadowing of it in actual events. No revival of export trade is in sight, but home demand is so broad and so strong that iron and steel manufacturers speak confidently of the first half of 1902, while many do not hesitate to predict another year of pronounced prosperity. The one overshadowing feature of the iron trade today in all departments is the unprecedented friction resulting from the failure of the railroads to provide for the freight offered them. The story of car shortage is so familiar as to lose its force, but the present congestion is without parallel in the records of 1899 and with many manufacturers and consumers is the uppermost question, beyond any consideration of prices or production. No relief is in sight before the close of the navigation season, when the pressure from the ore and coal trades, both of which, like other lines, are today seriously handicapped. In some instances the failure of transportation facilities has actually reduced production in iron working lines, and many foundries daily face the alternative of shutting down. The mills that were closed by the steel strike have made no great headway as yet in replenishing the stocks in distributers' hands, depleted in the weeks of shut-down, and will pass into the new year under full headway, with prospects of operation throughout the winter at the present record pace. The strong factors in the situation that have been pointed out week by week seem to be emphasized. The railroads have placed rail contracts that insure the operation of the United States Steel Corporation's rail mills up to September, 1902, and the presumption is that other producers are not far behind. The Pennsylvania Railroad's 150,000 tons of rails, it is reported, are to be distributed among mills on its lines, as heretofore. Including this the business booked and carried over runs to fully 1,500,000 tons. Second in importance only to rails is the tonnage booked by structural mills, each week adding to the excess of bookings over shipments. At Pittsburg the Pan Handle and the Wabash bridges, one placed and the other soon to be, call for 11,000 tons of steel. Bridge works are full of orders for months ahead, and locomotive works will be occupied well past the middle of next year on business already taken. Plates are still the one exception to the general report of crowded order books, and here the lack is on sheared plates, universal mills being well supplied. Lake shipyards have helped out somewhat by recent contracts for plates. The bar iron trade is working toward a stronger position. The Eastern mills with one exception are parties to the agreement to maintain 1.55c at Pittsburg, and a meeting at Chicago the past week is expected to result in an arrangement insuring uniform action by all Western mills. The recent advance, however, has caused a lull so far as contract buying is concerned, consumers being disposed to test the permanency of the agreement. Shafting manufacturers are planning to revive their association. A meeting for that purpose will be held at an early date. Sheet mills have not made much headway yet in overtaking accumulated contracts, demand being unprecedented for the fall months. Steel works reflect the activity in finished material. Billets for early delivery have brought as high as $27, Pittsburg, for Bessemer stock and $27.50 for open-hearth, though contracts for the early months of 1902 are still made at $24. The pig iron market is generally firm. About 15,000 tons of Bessemer iron are reported sold at Pittsburg at $16. Forge iron is slightly higher at $14.15, Pittsburg, and foundry iron under good buying is stronger at Pittsburg Cincinnati reports one 15,000-ton transaction in pig iron for pipe works.

PITTSBURG.

OFFICE OF *The Iron Trade Review*,
429 PARK BUILDING, Oct. 23.

The activity in steel rails for delivery next year continues, and nearly 1,500,000 tons are now on the books of the rail makers for delivery in 1902. The contracting during the past week has been particularly heavy, although several large contracts still remain unplaced. The largest of these is that of the Pennsylvania railroad, which will provide for about 150,000 tons. It has been stated that this contract has been placed with the Cambria Steel and Pennsylvania Steel Companies, but we have been advised that such is not the case. Despite the relationship now existing between the Pennsylvania railroad and these two large rail manufacturers, the officials of the Pennsylvania railroad have decided to divide up their tonnage as they have in the past, and all the rail mills along the lines owned by the company will share in the order. This division of tonnage will give the Pennsylvania and Cambria Companies about 50,000 tons, while the remainder will be divided up among the various companies of the United States Steel Corporation and the Lackawanna Iron & Steel Co. Sufficient orders have already been closed by the Carnegie Steel Co., which together with hold overs will insure the operation of the Edgar Thomson rail mill for at least ten months of next year. We have also been informed that as soon as the mills have caught up on their orders for tin and sheet bars the Ohio mill of the National Steel Co. at Youngstown, O., will be put on rails again. It is not probable, however, that this will be done before the first of the year. How long the Ohio mill will operate on rails depends entirely upon the tonnage still to be placed, but inasmuch as 1902 promises to be a banner year in rail production, the indications are that the mill will operate on rails a considerable portion of the year.

The buying of foundry iron for delivery through the first half of next year has been very heavy during the past few days and the total tonnage placed amounts to about 15,000. The price of No. 2 has also slightly advanced and as high as $14.75 has been paid on some contracts. We also note the sale of 2,000 tons of gray forge iron at $14.15 Pittsburg, which is also a slight advance over ruling prices.

In all finished lines with the possible exception of plates and rods the market shows exceptional strength. Sheared plates are in very small demand and none of the mills in this district have more than two weeks' orders on their books. With the exception of high carbon plates none of the manufacturers have more than three weeks' business ahead, while on the best grades of plates we have been advised that the mills are about six weeks behind on their orders. The

American Shipbuilding Co., however, has placed a good sized contract, which will help to strengthen the market.

Foreign competition on ferro-manganese has again forced down the domestic product and during the past few days a price of $53.50 per ton was made to consumers in carload lots, delivered at buyer's mill, while foreign producers are offering their product at $50 per ton. Consumers have been given the assurance, however, that the price of the foreign product would be met and another reduction in domestic ferro is looked for.

The shortage of cars still continues to prevent the proper movement not only of iron and steel products, but coal and coke as well. During the past week the situation was much the same as the previous week, and although the railroads have made promises of a better supply of cars few of the large shippers are securing more than 75 per cent of their requirements. In the Connellsville coke region a large amount of coke is being stacked due to the scarcity of cars and furnaces in all parts of the country continue to operate on only limited supplies.

PIG IRON.—Small lots of Bessemer iron for delivery during the month of November continue to be offered and we note the sale of 5,000 tons at $16, Pittsburg. The buying of foundry iron for delivery the remainder of the year and through the first half of next year has been very heavy during the past week and fully 15,000 tons were sold at prices ranging from $14.50 to $14.75 per ton. We also note the sale of 2,000 tons of forge iron at $14.15, Pittsburg. Basic iron continues scarce and the furnaces are holding their product at $15.35 to $15.50, Pittsburg. We note the sale, however, of an odd lot of 5,000 tons of basic at $15, Pittsburg, for delivery during November and December. We make the following quotations:

Bessemer, Valley	$15 25
Bessemer, Pittsburg	16 00
No 1 Foundry	15 00 to 15 25
No. 2 Foundry	14 50 to 14 75
No. 3 Foundry	14 00 to 14 25
Gray Forge, Pittsburg	14 00 to 14 15
Chilled Basic, Valley	14 50 to 14 75
Chilled Basic, Pittsburgh	15 25 to 15 50

STEEL.—The scarcity of both open-hearth and Bessemer steel billets continues, although it is believed that the situation will be considerably relieved within the next few months, when the tin and sheet mills have disposed of the large amount of accumulated business due to the steel strike. We note a sale of 1,000 tons of Bessemer billets at $27 per ton, also a sale of 500 tons of open-hearth billets at $27.50 per ton. Bessemer billets for delivery after the first of the year are quoted at $24 to $24.50 per ton, while open-hearth billets are held at $25 to $25.50 per ton for the same delivery. Jones & Laughlins, Ltd., who have been buyers of open-hearth billets in the past, will not be dependent upon the open market for any portion of their supply after next February, when their new Talbot furnace will be placed in operation. The rod market continues weak with little demand. Local mills are quoting $33 per ton at Pittsburg mill.

FERRO-MANGANESE.—For delivery next year the price of domestic ferro-manganese has been reduced to $53.50 per ton, in carload lots delivered at buyer's mill. Foreign manganese, falling slightly below 80 per cent, is being offered at $50 per ton, and it is probable that the domestic producers will meet this price in order to overcome the foreign competition.

SPELTER.—The spelter market continues to rule strong, although prices during the past week did not continue as firm as they did the week previous. Prime Western grades are quoted at 4.20c, Pittsburg.

MUCK BAR.—The demand for muck iron is not very strong and the best grades are quoted $29.25 to $29.50, per ton.

SKELP.—Demand for skelp is strong and steel skelp is particularly scarce. The latter is sold at 1.85c to 1.90c while grooved and sheared iron skelp is quoted at 1.95c to 2c, Pittsburg.

RAILS AND TRACK MATERIAL.—The rail market continues active and with the hold-overs the rail mills are now carrying nearly 1,500,000 tons on their books for delivery next year. It is predicted that the production of rails next year will fall between 2,500,000 and 3,000,000 tons. Never before in the history of the steel business has so great a tonnage of rails been carried on the books of the mills during the month of October for delivery the next year, and as the rail situation has always been a barometer of the steel trade nothing but a strong market can be predicted for most lines next year. Our rail quotations are as follows: Standard sections, 50 pounds and over, in lots of 200 tons and over, $28; car lots and less than 200 tons, $30; less than car lots, $32; light rails, 8 pounds, $45; 12 pounds, $38; 16 pounds, $35; 20 pounds, $34; 25 to 40 pounds, $32. Track material: Spikes, 1.95c to 2c; track bolts, square heads, 2.40c; hexagon heads, 2.55c; fish plates, 1.50c to 1.60c.

PLATES.—With the American Shipbuilding Co. coming into the market with a further tonnage of plates there is slightly more strength in the plate situation generally. On sheared plates the mills have very nearly caught up on thier orders while deliveries on nearly all kinds of plates with the exception of locomotive and firebox steel, can be made within three weeks. Prices remain unchanged as follows: Tank plate, ¼-inch thick and up to 100 inches in width, 1.60c at mill, Pittsburg; flange and boiler steel, 1.70c; marine, ordinary firebox, A. M. B. A. specifications, 1.80c; still bottom steel, 1.80c; locomotive firebox, not less than 2.10c; and it ranges in price to 3c. Plates more than 100 inches wide, 5 cents, extra 100 pounds. Plates 3-16 of an inch in thickness, $1 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5 cents extra a hundred pounds for less than carload lots. Terms, net cash in 30 days.

BARS.—Demand for steel bars continues strong and local mills are well provided with business until next March. The agreed price on iron bars is being well maintained. We make the following quotations: Bessemer bars, 1.50c; open-hearth, 1.60c; plow beams and cultivator beams, 1.50c, net; channels, angles, zees and tees, Bessemer, under three inches, 1.60c; over 3 inches, 1.70c. Common iron bars, 1.55c, Pittsburg; refined iron bars, 1.75c and upwards.

PIPES AND TUBES.—Unfounded reports of the situation in merchant pipe, tubing and casing have resulted in jobbers making deep inquiry into market conditions before placing contracts. Having satisfied themselves that there is nothing in the outlook at present that would warrant a weakness in the market, they are placing orders for delivery to the first of the year and in some instances are buying heavily. A large tonnage is being carried on the books of the National Tube Co. and the independent pipe producers. The former will not be able to commence to accumulate any stock for three months at least, owing to the urgent demand for deliveries. A continued fair demand will still further put off the accumulation of stock material, always carried to enable prompt shipment in urgent cases. Prices are firm and unchanged. Discounts to consumers, Pittsburg, in carload lots are as follows:

MERCHANT PIPE.

	Blk. Per cent.	Galvd. Per cent.
⅛ to ⅜ and 11 to 12 inches	61	48
½ to 10 inches	68½	56

BOILER TUBES.

Steel.

	Per cent.
1 to 1¾ inches	47½
2¼ to 5 inches	65½
1¾ to 2¼ and 6 to 13 inches	60

Iron.

	Per cent.
1 to 1¾ and 2¼ inches	43½
1¾ to 2¼ inches	43
2¼ to 13 inches	53

CASING.

	S. and S. Per cent.
2 to 3 inches	58
3¼ to 4 inches	63
4¼ to 12½ inches	65

SHEETS.—Despite the fact that the steel strike has been at an end for more than a month, deliveries on sheets are no better than they were two weeks ago. With few exceptions they are from two to three months behind. Demand for sheets from the stove trade is very heavy and for spot shipment high prices continue to be paid. In tin plate the situation is somewhat better, probably due to the fact that the consumption of tin plate is not as heavy as during the summer months when the canning season is at its height. For spot shipment, 100-pound coke plates command from $4.50 to $4.75 per box, while for November delivery jobbers ask $4.30 per box. No price has yet been fixed by the American Tin Plate Co. for tin plate for the first quarter of next year, but it is

probable that the present price of $4 per box will be continued. Black sheets for spot shipment are quoted as high as 3.85c for No. 28 gauge. The following quotations to the trade are made by the American Sheet Steel Co. distributers: Blue annealed sheets, Nos. 10, 11 and 12, 2.40c; Nos. 14 and 15, 2.50c; Nos. 16 and 17, 2.60c. One pass through cold rolls: Nos. 18, 19, 20 and 21, 2.50c; Nos. 22, 23 and 24, 2.80c; Nos. 25 and 26, 2.90c; No. 27, 3c; No. 28, 3.10c; No. 29, 3.25c; No. 30, 3.35c. On lots less than 500 bundles the American Sheet Steel Co. does not make shipments except through jobbers. Galvanized sheets are quoted at 70 and 10 off; galvanized sheets for spot shipment, at 65 and 5 off. Prices to jobbers are somewhat lower than the above. Independent manufacturers quote black sheets No. 28 gauge for future delivery at 3.35c.

STRUCTURAL MATERIAL.—The contract for the Wabash railroad bridge to span the Monongahela river will be placed some time this week. About 10,000 tons of material will be required. New business continues very satisfactory for this season of the year and on heavy angles mills cannot begin to make deliveries on new business until February. Prices remain firm but unchanged as follows: Beams and channels, 3 to 15 inches, 1.60c; 18 to 24 inches, 1.70c; tees, 1.65c; zees, 1.60c; angles, from 3 to 6 inches, 1.60c; universal mill plates, 1.60c.

WIRE AND WIRE NAILS.—Independent producers of wire nails continue to make concessions of 2½ to 5 cents a keg to secure business. The American Steel & Wire Co. continues to hold former quotations the good demand taking up substantially all the current make, while some of the independent producers are now cutting but 2½ cents instead of 5 cents on nails. We quote: Single carloads of wire nails to jobbers, $2.30, Pittsburg; to retailers, $2.40; plain wire, carload lots, is quoted at $2.25 to jobbers and $2.35 to retailers; painted barb wire, $2.60 in carload lots to jobbers, and $2.70 to retailers; galvanized barb wire, $2 in carload lots to jobbers, and $3 to retailers. Cut nails are quoted at $2.05, Pittsburg, in carload lots, 2 per cent off in 10 days.

MERCHANT STEEL.—Contracts for tool steel for delivery next year are now being made and already a big tonnage has been booked. The indications are that contracts will be closed within the next two months for nearly all the tool steel required by the largest consumers for next year's consumption. Quotations are as follows: Turned, cold rolled and ground shafting is quoted at 60 per cent off for car lots and 55 per cent off for less than car lots; tire steel in carload lots and over, 1.60c; less than carload lots, 1.75c to 1.80c. Toe calk is sold at 1.70c, in large lots, and in small lots as high as 1.85c. Tool steel is held at 7c and upwards, according to quantity.

OLD MATERIAL.—Demand for old material continues only fair and prices remain practically unchanged. We make the following quotations, gross tons: Heavy melting stock, $15.75 to $16.25; low phosphorus melting stock, $17 to $17.50; steel rails, $16.75 to $17; busheling scrap, $13 to $14; No. 1 wrought, $17 to $17.25; iron rails, $21.50 to $22; cast borings, $7.50 to $7.75; cast scrap, $13.50 to $14.

COKE.—Both furnace and foundry coke is stronger than for some time and non-Connellsville producers are securing as high as $1.75 for furnace coke and $2 for foundry. Connellsville furnace coke is held at $2.15 to $2.25 and foundry at $2.40 to $2.50. For the week ending Saturday, Oct. 12, the output of the Connellsville region amounted to about 227,000 tons, which was about 9,000 tons greater than that of the previous week.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
934 MONADNOCK BLOCK, Oct. 22.

Outside of the scarcity of cars, there is little of special interest to note in this market. Transactions in pig iron during the past week were confined mostly to carload orders, which have been very numerous and aggregate a fair tonnage. There are a few large inquiries in the market, though practically all the heavy consumers have covered for their needs. The buying of finished materials continues undiminished in nearly all lines. Prices are firm, with the exception of scrap iron, and trading is gradually resuming normal conditions that existed prior to the strike. The shortage of cars is rapidly becoming a serious problem with both consumers and shippers in this district. It is reported that a number of foundries in outlying districts which have been buying as the needs presented themselves, have been seriously crippled, and in some instances have been compelled to shut down, owing to their inability to get either coke or iron. Railroads say that it is impossible to get more cars for the iron trade and that had they all that is needed it would be almost impossible to handle more traffic than is now being carried over their lines.

Representatives of Western bar iron mills met in Chicago last Friday and Saturday, and steps were taken toward the organization of an association to be known as the Western Bar Iron Manufacturers' Association. The purpose of this association, which it is hoped will include in its membership all the bar iron manufacturers west of Pittsburg, is to keep prices of bar iron uniform and to discuss subjects of particular interest to manufacturers in the sale of this product. Beyond discussing the preliminaries of organization, nothing of importance was accomplished at the meetings.

PIG IRON.—Pig iron for prompt delivery is in great demand, but owing to the dearth of cars it is impossible to fill all the orders that are offered. Very little business involving considerable contracts has been transacted during the past week, all the large consumers having covered for their needs. There ar, however, a few contracts pending running up to as high as 2,500 tons. Prices of Northern and Southern irons are very firm, and commission merchants handling the latter grades say that a further increase is contemplated during the month. We quote as follows:

Lake Sup. Charcoal	$17 50 to $18 00	Southern Coke No. 4	$13 65 to $13 90
Local Coke Fdy. No. 1	15 50 to 16 00	Southern No. 1 Soft	15 15 to 15 45
Local Coke Fdy. No. 2	15 00 to 15 50	Southern No. 2 Soft	14 65 to 14 90
Local Coke Fdy. No. 3	14 50 to 15 00	Southern Silveries	15 40 to 15 60
Local Scotch Fdy. No. 1	15 50 to 16 00	Jackson Co. Silveries	17 00 to 17 50
Local Scotch Fdy. No. 2	15 00 to 15 50	Ohio Strong Softeners	16 50 to 17 00
Local Scotch Fdy. No. 3	14 50 to 15 00	Alabama Car Wheel	21 00 to 22 00
Southern Coke No. 1	15 40 to 15 65	Malleable Bessemer	16 00 to 17 00
Southern Coke No. 2	14 65 to 14 90	Coke Bessemer	17 50 to 18 50
Southern Coke No. 3	14 15 to 14 40		

BARS.—There seems to be a feeling of uncertainty among large consumers of bar iron as to whether manufacturers will hold the present prices; sales, consequently, though numerous have been small in tonnage. No disposition, however, can be found among mills to cut prices, and as all of them have sufficient business on their books to keep their plants running several months it is not expected that the present prices will be lowered. We quote steel bars for immediate shipment, 1.75c to 1.80c, Chicago, and iron, 1.70c, Chicago. Out of store, steel and iron, 2c; on contracts for large lots and extended deliveries, steel, 1.65c, and iron, 1.70c.

SHEETS.—Sales agents of Eastern mills report that a large tonnage has been booked in this market, though it is impossible to deliver new business for two or three months. With warehouses of consumers and jobbers being replenished by shipments from the mills, prices are gradually reaching their former level. We continue to quote No. 27 black, 4.10c to 4.25c, and galvanized, 65 per cent from store.

STRUCTURAL STEEL.—The buying from jobbers' stocks still continues very heavy and mills report a number of good-sized contracts taken during the past week. We quote mill shipments, carload lots, as follows: Beams, 15 inches and under, 1.75c; 18 inches and over, 1.85c; angles, 1.75c to 1.80c; plates, 1.75c, base; tees, 1.80c; zees, 1.75c; small lots from store, ¼c higher; beams and channels from store, ½c to ¾c per pound higher.

BILLETS.—Though it is very difficult to buy billets in this market, except in small quantities, we quote Bessemer billets $31 to $33, and open-hearth, $33 to $35.

RAILS AND TRACK SUPPLIES.—It is reported that the Pennsylvania railroad expects to place 175,000 tons of rails; this added to the large tonnage already contracted for, will fill most of the mills for nearly three-quarters of their next year's capacity. There are still a number of large deals pending, and further inquiries are reported. Light rails, of all sizes, are in great demand, also track supplies, and delivery on new business cannot be made by any of the local mills before November or December. Our quotations follow: Standard rails, $28; light sections, $31 to $33, according to size; out of store, $40 to $44; splice bars, 1.60c to 1.70c; spikes, 1.90c to 2c;

out of store, 2c; track bolts, hexagon nuts, 2.80c to 2.90c; out of store, 2.90c to 3c; square nuts, 2.65c to 2.75c; out of store, 2.75c to 2.85c.

MERCHANT STEEL.—There is a steady stream of good business in the line of miscellaneous merchant steel, both from the manufacturing and jobbing trade. This business is coming entirely unsolicited. Cold rolled shafting is firm. Our quotations for mill shipments, Chicago delivery, follow: Smooth finished tire steel, 1.90c to 2c; open-hearth spring steel, 2.50c to 2.75c; toe calk, 2.40c to 2.60c; sleigh shoe, 1.85c to 1.90c; cutter shoe, 2.40c to 2.60c; ordinary tool steel, 6c to 7c; specials, 13c and upwards. Cold-rolled shafting, carload lots, 55 per cent and upwards.

PLATES.—Orders for small lots are numerous and aggregate a good tonnage. The local interest reports no transactions worthy of special note. Our quotations follow: Tank steel base, ¼-inch, 1.75c; flange steel, 1.90c to 2c; marine steel, 1.95c; firebox steel, ordinary, 2c to 2.10c; special, 2.25c and upwards. Tank steel from store, 2c to 2.20c; flange steel from store, 2.25c.

MERCHANT PIPE AND BOILER TUBES.—The demand for all sizes is very good. Prices vary according to the size of order and shipment desired. It is reported that a deal is on foot to lay a pipe line from the Texas oil fields to New Orleans, a distance of about 100 miles. Our quotations follow:

MERCHANT PIPE, RANDON LENGTHS.

	Black Per cent.	Galv. Per cent.
⅛ to ⅜ and 11 to 12 in.	59.5	46 5
½ to 10 inches	67	54.5

BOILER TUBES.

	Steel Per cent.	Iron Per Cent.
1 to 1¼ in.	40	35
1¼ to 2¼ in.	45	40
2¼ to 5 in.	55	50
6 in. and larger	45	40

WIRE AND WIRE NAILS.—The buying of all kinds of wire material continues as heavy as reported in past weeks. The local interest has practically no stocks of any kind on hand, and its entire output is consumed in filling orders. Jobbers all over the country also report that stocks are depleted, and that the demand for material was never so great. There seems to be a disposition to shade prices on some materials where attractive business is offered, in order to meet the cutting of some of the smaller manufacturers. Prices, generally, however, will be on the same basis as last year. Our quotations are: Carloads of wire nails to jobbers, $2.40, Chicago; to retailers, $2.50; plain wire, carload lots to jobbers, $2.35; to retailers, $2.45; painted barb wire to jobbers, carloads, $2.70; to retailers, $2.80; galvanized barb wire, carloads to jobbers, $3; to retailers, $3.10.

OLD MATERIAL.—There is plenty of material offered in this market, though apparently very little demand. Prices consequently are weaker and constantly being shaded. We revise our quotations as follows:

Old iron rails	$21 00 to $21 50	Old Wheels	$15 00 to $15 50
Old steel rails, long	18 00 to 18 50	Heavy melting steel	13 50 to 14 25
Old steel rails, mixed	13 50 to 14 50	Mixed country steel	10 50 to 11 00
Relaying rails	24 00 to 25 00		

The following are selling prices per net ton:

No. 1 R. R. wrought	$16 25 to $16 75	Iron axles	$21 50 to $21 50
No. 2 R. R. wrought	13 50 to 13 75	Cast borings	4 50 to 5 00
Dealers' forge	13 00 to 13 50	Wrought turnings	10 50 to 11 00
No. 1 busheling	11 50 to 12 00	Iron axle turnings	12 00 to 12 50
Heavy cast	11 00 to 11 50	Steel axle turnings	10 50 to 11 50
Railway malleable	12 00 to 12 50	Stove plates	8 50 to 9 00
Country malleable	11 00 to 11 50	Old iron splice bars	16 50 to 16 75

CLEVELAND

OFFICE OF *The Iron Trade Review*,
1064 ROSE BUILDING, Oct. 16.

The approach of the closing month of the navigation season is indicated by the bidding up of the ore rate from the head of the lake to $1, a 30,000 ton block having been taken at that price in the week, the ore to be moved before Nov. 10. It is believed about 40,000 tons in all was done at the $1 rate. The anomaly is presented of a declining grain rate under an unprecedentedly light movement of grain. Meantime coal is being carried up at a good rate and the only limitation on the coal shipments is the failure of mines and railroads to get the coal to the lower lake docks. The October ore movement is likely to be rather disappointing. Detention has been aggravated, car shortage has been more marked, and the indications are that hard work must be done to reach the 20,000,000-ton mark. Furnaces have taken a good percentage of direct ore, rather more than last year's from most docks.

PIG IRON.—Some good inquiries are pending in the local market including one for 6,000 tons of foundry distributed over the first half of next year and several thousand tons of Nos. 3 and 4 and gray forge for pipe works, part for this year and part for the early months of 1902. Buyers who want to make sure of deliveries of particular brands are looking after their requirements for the first half of next year; others are only provided for to Jan. 1. The difficulty of getting iron for immediate use, which has long been talked of, seems to be more serious and it is not uncommon for a single car of iron to be all that separates a good sized foundry from a shut down. There does not seem to be any early relief in this respect. The car shortage is complained of on every hand. Nor is the supply of foundry iron likely to be augmented by the blowing in of additional furnaces. The merchant Bessemer market has been so much more active than was counted on a few months ago that there will be no turning of Bessemer furnaces to foundry iron for a good many weeks, and Bessemer iron at $15.25 at furnace is more attractive than the foundry proposition. So far as Valley furnaces are concerned their product of all descriptions is practically disposed of to Jan. 1 and there are inquiries for early deliveries of foundry iron which some producers have been unable to take care of. We make no change in prices for the Cleveland market; though on both forge and foundry irons there is more firmness:

Bessemer	$16 00	Valley Scotch No. 1	$15 00 to $15 25
No. 1 Strong F'dry	14 75 to 15 25	Valley Scotch No. 2	14 50 to 14 75
No. 2 Strong F'dry	14 50 to 14 75	Gray forge, Valley	13 25
No. 3 Foundry	14 00 to 14 25	LakeSuperior charc'l	17 00 to 17 50

FINISHED MATERIAL.—Lake shipyards continue to do their share in appeasing the hunger of the plate mills. This is still the only department of the market that shows any slackness, and it is rather on sheared than universal plates, the mills rolling the latter being comfortably supplied with tonnage. Material for two vessels was placed in the past week, plates and shapes together amounting to about 2,700 tons. Boiler works and the general plate consuming trade are having little difficulty about deliveries now, being able to turn around in less than a week. The structural mills are very full of work, the outlook for next year in this line being second only to that for the rail mills. In the past two weeks there has been a good run of business through Cleveland offices, contracts for shapes, deliveries in the next four or five months, having been closed in the fortnight for 7,000 or 8,000 tons. The sheet trade is still in exceptionally strong condition, jobbers having all the business they can take care of. We quote as heretofore No. 12 blue annealed at 2.35c to 2.40c at mill carload lots; No. 16, 2.60c; Nos. 22-24, one pass through cold rolls, 2.80c; No. 27, 3c; No. 28, 3.10c; galvanized sheets for early delivery, 65 and 5 per cent off. The advance in bar iron prices has not stimulated business and contracting has been suspended for the time being, though small-lot requirements give a good aggregate. We quote 1.55c at Pittsburg mill or 1.63½c Cleveland, for carload lots, and 1.75c from store, Cleveland. The agreement on a Pittsburg basis seems to be generally maintained. But one Eastern concern is outside and the Western mills are believed to have all assented. On steel bars we continue to quote 1.50c Pittsburg for Bessemer and 1.60c for open-hearth.

OLD MATERIAL.—A large buyer is reported to have made some purchases recently. Prices have not changed in the week. On some descriptions of scrap there is less strength. We give dealers' quotations to mills and foundries, as follows, all in gross tons:

Old steel rails, rolling mill lengths	$17 00 to 18 00
Old steel rails, short lengths	16 50 to 16 75
Iron rails	21 00 to 22 00
No. 1. railroad wrought	16 50 to 17 00
Mill scrap	14 50 to 15 50
No. 1. machine scrap	14 00
Cast borings	7 50 to 8 00
Grate bars	9 00
Sheet iron	9 00 to 9 50
Stove plate	9 75 to 10 00
Car wheels	15 00

CINCINNATI.

Oct. 22.

The iron trade is in an entirely satisfactory condition. It gives no sign of becoming otherwise, though some shrewd

buyers speak of finding rock bottom prices more readily than during the steel strike. Manufacturers of finished material explain this by the statement that iron stores and handlers with stocks have been heretofore demanding such a premium for early delivery that they appear more ready to accept bids since it has turned around so that manufacturers can promise deliveries in shorter time than formerly required.

The movement in all branches of the trade is holding up, and this is taken as sufficient indication that there will be no recession in prices. Stocks of iron in the hands of furnaces continue to decrease, foundrymen continue to complain about the delivery on contracts, machinery builders are jogging the foundrymen for castings every day, and the new plants that are starting and the old ones that need equipment are putting off the operations for which they are needing additional tools; all because the demand does not slow up enough to give the supply a chance to catch up.

Only today the head of a concern in a Massachusetts manufacturing city was in Cincinnati on his third trip to hurry up an engine builder on an order placed in July. The engine builder, being a man of deeds and not of words, decided to set himself right with an object lesson. He took the man into his shop and asked one of his men what had been the cause of the delay in getting such and such an engine built, being the one in question. He got the answer that it was because of the delay in getting some of the large castings. Then the way was opened up to him to go farther and ask of the foundryman why the castings had not been delivered. Because of the large amount of work that he had on hand and slow deliveries of pig iron on old contracts. What could the poor foundryman do? Then the pig iron man could not be held responsible—he was doing everything he could, but the furnace couldn't deliver faster than it was making, with stocks running lower all the time, too. And possibly the furnace has some excuse as good as the rest. And that is the way of it. Stocks of iron are getting lower and prices on Southern foundry grades have advanced, but there are no additional stacks being blown in. Foundrymen are having a time keeping their customers in good humor, but outside of one instance the foundry capacity in Cincinnati has not been added to in the past six months. Manufacturers of machine tools, engines and the like are having a very good business and are behind in their orders, but there are comparatively few new concerns getting into the business. It is apparently a time for feeling the way.

Pig Iron.—Buying of pig iron continues steadily, most of the orders booked being of 200 to 500-ton lots for delivery at various times during the next six months. A large independent pipe foundry placed orders during the week for 15,000 tons of Southern iron, half of which was bought of one Cincinnati concern. Foundry irons have had the call in general but there has also been good buying of gray forge. Otherwise the buying is well distributed through the list. There are continued requests to hurry up deliveries, and while some makers are coming a little nearer to their demand, there are a few that seem to be unable to get caught up at all. A large foundry outside of Cincinnati with a contract dating from last summer gave notice that unless the order was filled it would go into the market and buy the iron and charge up the difference, "for," the firm wrote, "we believe that iron is going higher." There has been no change in the prices on pig iron, which remain as follows f. o. b. Cincinnati:

Southern Fdy. No. 1	$14 00 to $14 25	Gray Forge	12 25 to 12 50
" " 2	13 50 to 13 75	Northern Fdy. No. 1	$15 10 to $15 60
" " 3	13 00 to 13 25	" " 2	14 60 to 15 10
" " 4	12 50 to 12 75	Charcoal C. W. iron	17 75 to 18 25
So. Fdy. No 1 soft	14 00 to 14 25	Malleable coke iron	15 00 to 15 25
So. Fdy. No. 2 soft	13 50 to 13 75		

Finished Material.—The market is firm and the demand is good for finished material. The agreement on bar iron has not had any noticeable effect on the market and it is not expected that it will for the time being at any rate. There is no reason to expect a further advance by the manufacturers, and on the other hand buying does not show that consumers are looking for any inside figures. Deliveries are about the same as they have been, still somewhat behind. Manufacturers in all lines that need material out of the iron stores or from the mills are uniformly busy. Prices are as follows: Iron bars, 1.65c to 1.70c, carload lots f. o. b. Cincinnati; steel bars, 1.60c to 1.65c; angles, 2c; plates, 1.85c to 1.90c, with 2c asked for quick delivery; sheets, No. 28, 3.35c to 3.40c; No. 12 blue annealed, 2.35c.

Old Material.—Scrap dealers are figuring on lots of old rails now, and it is expected that there will be more of them in the market in a few months. The purchases of new rails noted in *The Iron Trade Review* last week, as made by the trunk lines, have been taken as a cue to what may be expected. This additional supply is too far in the future to cut much of a figure now, and in fact the prices on old rails have been generally quoted up. There is a plentiful supply of nearly all other kinds of scrap, this being due in measure to the fact that new equipment has taken the place of old, and the useless stuff has been forced out of use and onto the scrap market, the continued satisfactory business conditions having caused a considerable movement in this direction. Prices on scrap are quotable as follows, changes being mostly in rails, wheels, turnings and borings:

Old No. 1 Wrought Railroad	$ 14 75 to 15 00
Cast Machine and Foundry	12 25 to 12 75
Old Iron Rails	19 00 to 19 50
Old Steel Rails	14 75 to 15 25
Old Short Lengths	13 75 to 14 00
Old Iron Axles	19 50 to 20 50
Old Iron Car Wheels	16 00 to 16 25
Stove Plates	9 75 to 10 00
Wrought Turnings, net tons	1150 to 12 00
Cast Borings, net tons	5 50 to 6 00

PHILADELPHIA.

Oct. 22.

While no new features have developed during the week the market has maintained a strong tone. The Pennsylvania Railroad Co.'s heavy purchase of rails at $28, together with the great tonnage which must be carried over until 1902, lends strength to the position of the mills. There is some speculation as to how far new capacity, now nearing completion, will affect market conditions, and considerable business is being placed for short time deliveries on this account.

Pig Iron.—Both buyers and sellers appear to be satisfied with the volume of trade and prices obtained and from present indications there is nothing to change this state of affairs for some time to come. The presence of a fair demand and light offerings tend to keep values firm. Prices remain about as they were a week ago, and we quote for Philadelphia and nearby points as follows: No. 1 X foundry, $15.50 to $16; No. 2 X foundry, $15 to $15.50; No. 2 plain, $14.50 to $14.75; standard gray forge, $13.75 to $14; ordinary gray forge, $13.25 to $13.50; basic (chilled), $14 to $14.25.

Finished Material.—Prompt deliveries are as yet hard to secure in some lines. New business has come forward in fair volume, though it is not believed that the amount of work on hand is increasing. With new capacity shortly to be added it is felt that somewhat easier conditions are in sight. There is enough business to satisfy everybody and prices remain steady, being about as follows for city and short distance deliveries. Plates, ¼-inch and thicker, 1.70c to 1.75c; bars, iron or steel, 1.62½c to 1.70c; angles, 1.75c to 1.85c; beams and channels, 1.75c to 1.85c.

Old Material.—No material changes are to be noted in prices, although the market exhibits less firmness. Bids and offers are about as follows for deliveries in buyers' yards: Choice railroad scrap, $19 to $20; ordinary light scrap, $12.50 to $13.50; machinery cast, $13.75 to $14.25; heavy steel scrap, $17.50 to $18; old iron rails, $20 to $20.50; old steel rails, short lengths, $17.50 to $18; wrought turnings, $11.75 to $12.25; cast borings, $7.25 to $7.75; old car wheels, $16.50 to $17; old iron axles, $23 to $24; old steel axles, $20 to $21.

M. Sims, formerly manager of the Seaboard Steel Casting Co., foundry department, of Chester, Pa., has started the New Haven Foundry Co. at New Haven, Conn., for making small gray iron castings, such as builders' hardware and bench work.

It is officially announced that the Westinghouse Electric & Mfg. Co. will construct a plant in St. Petersburg.

The Indiana Mfg. Co. of Jeffersonville, Ind., announces that it recently completed a factory of 100 fires capacity for the manufacture of chain. It is equipped with the latest improved machinery.

THE IRON TRADE REVIEW

Devoted to the Machinery, Metal-Working and Foundry Trades, and Iron and Steel Manufacture.

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ENTERED AT THE POST OFFICE AT CLEVELAND, O., AS SECOND CLASS MATTER

OCTOBER 24, 1901.

THE ADVANCE IN HEAT TREATMENT OF RAILS AND OTHER STEEL PRODUCTS.

A very interesting development has come from the adoption at the Edgar Thomson rail mill last December of a process for finishing rails at a lower temperature than is customary with modern rail mills. The railroads have refused to allow rail orders placed for rolling at the Edgar Thomson mill to be transferred to other mills, although a large amount of such shifting has been a part of the regular program under the arrangement between the rail mills, and has also been a feature of the United States Steel Corporation's method of handling business in cases where it controlled a number of mills rolling the same class of material. The Edgar Thomson rail mill is much farther behind in its orders than any other rail mill, but the roads having orders in it prefer to wait the extra time necessary in order to secure rails finished at a lower temperature and therefore possessing somewhat different physical characteristics.

The progress of metallography in that branch relating to the effect of heat treatment on the physical characteristics of steel has been so rapid, and the knowledge gained so important, that it has been impossible at once to make the changes in equipment and methods of working necessary to obtain the full benefit of the results reached, in any branch of steel finishing. Not only in rails, but in all other rolled steel products, the influence of recent researches will be felt in a very marked degree in the next few years. The rank and file engaged in rolling mill work is hardly cognizant, and the great body of consumers is almost wholly ignorant of the immense effect which heat treatment has upon the wearing qualities of steel.

The problems presented in rolling rails are quite different from those met in rolling almost any other steel shape. In rolling a steel plate, sheet, or merchant bar, for example, the point is to produce soft and tough material. It has been thoroughly established that such steel products should be finished below the "critical temperature," or say 1000° C., at which point the grain and cement are of equal hardness, and below which working elongates and interlocks the grains and produces toughness. It is also established that rolling should not be continued below the "blue heat" or state of minimum plasticity, lying just below, say, 375° C. Below this point working produces rupture between or in many of the grains. But as the steel is finished below the critical point and towards the blue heat internal strains and rolling hardness are produced, which require for some products a subsequent annealing. Such products as we have mentioned as require to be both soft and tough should, of course, be finished under the critical temperature, but not much under, unless they are subsequently annealed. But with rails the problem is different. The softness is not required, and the hardness produced by finishing at a temperature far below the critical point is desirable, but the exact amount by which the temperature of finishing should be reduced is as yet scarcely known.

A great advance has been made by the introduction of the system in vogue at the Edgar Thomson works in regard to rails. There is no question that the practice will be extended in the same or some similar manner as opportunities permit. With the problems presented in the rolling of other material, where the requirements are different, the ordinary rolling mill manager will have to grapple, and he will find that probably over half the complaints he has had about the physical characteristics of finished steel can be eliminated by finishing at proper temperatures, or by proper annealing. A large number of complaints which have been and are now referred to the chemist for explanation will be found to have their source in the finishing mill and not in the converting or open-hearth department.

THE OUTLOOK AT HOME AND ABROAD.

A current market review says: "The only apprehensions are those felt by the people who are constituted so that they think good times cannot last long. The majority of iron producers and consumers are sanguine of a continuance of present conditions during next year." To the class described in the first sentence may be added those who believe that the earnings of the corn-carrying roads will be affected by a very short corn crop, and that the serious condition of German industry and finance and the depression in the iron trade of all continental countries will be felt in some degree at some time in the United States. However, the way in which home demand has filled up the mills, and the remarkable buying programme of the railroads for next year indicate that the 76,000,000 people of the United States are going ahead for another year without seriously taking to heart the cutting down of their export trade in iron.

The British iron market, in which there has not been at any time an approach to the acute distress resulting from the lawless boom in Germany, gives more favorable indications week by week. More confidence in the future is now felt, though buyers, following the course of consumers in this country last year and this year, are restricting their orders to immediate requirements. The situation on the Continent is thus summarized

by our contemporary, the London *Iron and Coal Trades Review:*

"The French iron trade is so far from showing any sign of improvement that prices continue to have a downward tendency, and with the growing scarcity of work at the mills and forges, the outlook for the coming winter is by no means a cheerful one. The only satisfactory thing about the situation is the large buying on account of the Colonies, which are providing a good deal of acceptable employment to the rail makers and producers of railway material generally. The finished iron trade in Belgium seems to have little chance of recovering from the present depression so long as producers have to meet the ruinous competition from Germany. In the latter country there is a steady decline in home consumption, and producers are combining to carry on a severe competition in foreign markets."

In the United States, facts and events are substantially all on the favorable side; any other view is based upon what may happen that is not now foreseen. As for the relation of supply to demand, that is another question. What is of chief consequence is that serious interruption of the demand is not now in sight.

AUTOMATIC MACHINERY AND SKILLED LABOR.

The rapid development of automatic machinery in almost every field of industrial enterprise is the cause of some concern to those who see in its introduction a lessening of the need for skilled labor. It is true that machines in many instances have taken the place of that sheer muscular effort that made the pursuit of several trades a task only to be undertaken by men of rugged physical development. The chipping and calking hammer, the heavy sledge and button set with the companion holding-on weight, have given way in the march of progress to the easily handled, air-operated tools. The hand lathe and the cumbrous shoulder tools have been forced out of the struggle by the automatic machines that slice up a bar piecemeal with an ease and rapidity that leave no place in economical shop management for the older process.

These instances might be extended at considerable length. The point we wish to emphasize is that these methods have not been applied to the reduction of a limited amount of raw material to a finished commodity in an equally limited market, but have been intended to meet the ever-increasing requirements of a constant demand. The demand for competent machinists has steadily increased with the introduction of labor-saving machinery. It is a direct result of the pressure for skilled mechanics that forces to the front the daily improvements in shop methods and machinery.

The question is not one of substitution, so much as an effort in the direction of assisting the operator of a machine to obtain the maximum production. Many of the improvements are along the line of greater convenience in adjusting the tool to the work, of micrometer atachments, quick-acting chucks and other gripping devices, of increased flexibility in the speed and feed rate, etc. These are the features seriously considered by the modern machine tool designer.

The jig has displaced many tedious and uncertain methods, and the time gained from the general introduction of this and other labor-saving schemes has been allotted to other work. This could not do otherwise than raise the average standard of workmen and exercise a constant pressure toward still greater efficiency. The toolmaker is a direct product of these influences, and the demand for employees of this class means a higher remuneration for the men who take due advantage of the opportunities opened up by the introduction of labor-saving appliances.

Pittsburg Contracts for Structural Steel.

(Special Telegram.)

PITTSBURG, Oct. 23.—The Pope Tin Plate Co. has placed contracts for the steel buildings for its new tin plate plant to be erected at Steubenville, O., with the Riter-Conley Mfg. Co. of this city. About 1,500 tons of steel will be required. The contract for cranes has been let to Manning, Maxwell & Moore.

The American Bridge Co. has been awarded the contract for the construction of the new Pan Handle railroad bridge across the Monongahela river. About 4,000 tons of steel will be required. The Wabash railroad has not yet placed the contract for its connecting bridge across the Monongahela river, for which nearly 7,000 tons of structural material will be required. The contract will be delayed about ten days according to late advices.

New Iron and Steel Projects for Cleveland.

Reference has been made in the daily newspapers at intervals in the past few months to the plans under way for a large blast furnace and coking plant to be built on a Cuyahoga River site in Cleveland. The project has not taken definite shape as yet but most of the capital desired has been subscribed and land is under option. The original plan contemplated a blast furnace, to make foundry and basic iron and a by-product coke oven plant after the Otto-Hoffman type. Later proposals involve steel works. Among those prominent in the enterprise are members of several Cleveland iron ore firms, officers of the Union Rolling Mill Co., Wellman-Seaver Engineering Co. and the Lamson & Sessions Co., all of Cleveland. Another project that has good assurance of being put through contemplates the erection of a steel casting plant in Cleveland, especially for the production of small work.

Philadelphia Foundrymen's Association.

The eighth annual meeting of the Foundrymen's Association of Philadelphia, will be held at the Manufacturers' Club, Philadelphia, Nov. 6, at 8 p. m. There will be an election of officers for the ensuing year. A paper by H. M. Baldwin, manager Power Specialty Co., 126 Liberty St., New York, will describe the Bryan vacuum molding machine for lifting the pattern out of the sand. Mr. Baldwin will exhibit a working machine at the meeting. A paper will be read by Wm. D. Allen, of Huntsville, Ala., subject, "Controlling Contraction of Metals While Casting, With Special Reference to the Lower Fusing Metals."

The Westmoreland Steel Co. of Pittsburg, Pa., will enlarge its Greensburg, Pa., plant by the addition of an open-hearth furnace of 60 tons capacity, blooming mill, billet mill, guide mill and bar mill.

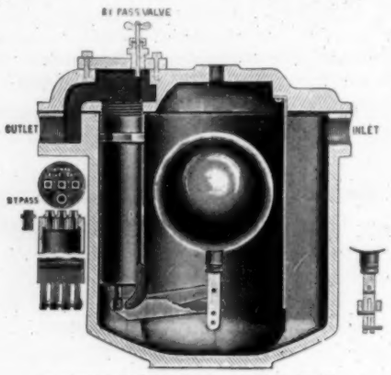
The director of architecture of the Paris Exposition has sent the Standard Paint Co., of New York, a certificate testifying to the ruberoid floor-cloth used in the building of administration at the Exposition. This product is adapted to use on floors of offices, stores, warehouses, factories, etc. The same company received a special medal on the novelty of its exhibit, in addition to those awarded for the quality of its

The Bartlett Steel Co., Joplin, Mo., has been incorporated with a capital stock of $50,000. The incorporators are John L. Bartlett, Jerome B. Grigg, J. W. Harris and others.

WRIGHT EMERGENCY STEAM TRAP.

As an insurance against disastrous engine wrecks, the Wright Mfg. Co. of Detroit, offers its emergency steam trap, an illustration of which is given herewith. The claims for it are that it will discharge large volumes of water instantly in an emergency and yet not waste steam under ordinary conditions. The principle is a simple one and in working it out the manufacturers have provided a special construction of valves and by-pass. Three steam-tight outlet valves are employed instead of one. These are placed at the top of the trap as far from the grit, dirt and sediment as possible. The water enters, filling the trap to the center of the float, forming a seal of from four to six inches of water over the lower end of the outlet pipe, thus preventing the escape and waste of steam.

When thus filled sufficiently to raise the float one valve is opened slightly, if there is but little water coming in, but widely in case of a sudden inflow. Under all ordinary conditions one of the valves is equal to the task of taking care of the water, but in event of the water coming into the trap faster than one valve can discharge it, the water rises in the



WRIGHT EMERGENCY STEAM TRAP.

trap, carrying the float with it and opening the second valve sufficiently to discharge the surplus water, or wide open if necessary, and so with the third valve if the volume of water coming into the trap is sufficient to tax the capacity of the three valves, which is very rarely the case. The discharge from each of these valves being continuous is much greater than is possible with an intermittent trap. Its action in emergencies is instantaneous. The Wright trap can be used with economy and satisfaction in factories having a large amount of condensation to dispose of, as well as in public buildings where they prevent the flooding of radiators by relieving them immediately of condensation when steam is turned on, allowing them to heat at once.

The Wright Mfg. Co. removed its office and factory last May from Cleveland to Detroit. The business is now operated under new management with ample capital and greatly increased manufacturing facilities.

The Talbot open-hearth furnace which Jones & Laughlins, Ltd., are installing at their South Side plant, Pittsburg, Pa., will be placed in operation February next. The daily output of basic open-hearth steel will be about 400 tons. The installation of this furnace will increase the steel output of this company fully 125,000 tons per year. The metal to be used in this furnace will be supplied by the Eliza furnace stacks, located on the opposite side of the Monongahela river. Work on the new blooming mill is progressing very fast but at present matters are in such a condition that no definite date for commencing operations can be fixed. It is altogether probable that a rail mill will be erected adjoining the blooming mill, but as yet work thereon has not been commenced.

The McClintic-Marshall Construction Co. of Pittsburg has been awarded the contract for the erection of a steel viaduct, 1,000 feet in length, which will connect the town of Turtle Creek Valley with Trafford Park, Pa., the latter being the new town which the Westinghouse interests will build for the centralization of their foundry operations. About 800 tons of steel will be required.

A Hartford Industry Removed to Cleveland.

The National-Acme Mfg. Co. of Cleveland, recently incorporated, has purchased the entire business, together with the patents, good will, etc., of the Acme Machine Screw Co., of Hartford, Conn., and the National Mfg. Co. of Cleveland, and has taken over all the contracts and obligations of the two companies that are now outstanding. The new company will be handled by those who have been actively engaged in the management of the individual companies, Messrs. A. W. and E. C. Henn coming with the machine company from Hartford. The National Mfg. Co. has manufactured a line of cap and set screws, and special milled work, turned from steel, iron, zinc and brass. W. D. B. Alexander is president and O. S. Werntz secretary. The new company is incorporated under the laws of Ohio with a capital of $750,000. W. D. B. Alexander is president; D. Elliott, vice-president; O. S. Werntz, treasurer; A. W. Henn, secretary, and E. C. Henn, general superintendent. A valuable manufacturing site on the Cleveland & Pittsburg railroad on Stanton St., near Quincy Ave., has been obtained and contracts have been let for the erection of a modern factory of brick and steel, 300x50 feet and four stories high. This will be provided with every facility for the manufacture of the Acme multiple spindle automatic screw machine, screw machine products, etc., and will be equipped with electric power. The new plant will be ready for occupancy early in 1902 and the Hartford business will then be moved to Cleveland.

Crucible Steel Co. of America.

At the annual meeting of the stockholders of the Crucible Steel Co. of America held in New York last week directors were elected as follows: James H. Park, Reuben Miller, G. B. Harton, Alexander Thomas, William P. Snyder and Alexander W. Black. A meeting of the directors was held this week in Pittsburg and officers for the ensuing year were elected as follows: C. H. Halcomb, president and general manager; James W. Brown, first vice-president; Benjamin Atha, second vice-president; R. F. Jennings, third vice-president; Reuben Miller, treasurer; Julius Bieler, assistant treasurer; P. B. Gaynor, auditor; Frank B. Smith, secretary. The company has under erection at Clairton, Pa., three blast furnaces and 12 open-hearth furnaces of 50 tons capacity each. Billet, slabbing and blooming mills will also be built as well as a number of merchant mills. None of the open-hearth furnaces located at any of the various plants will be removed to Clairton. The billets not used in the merchant mills will be distributed among the mills in the Pittsburg district for finishing purposes.

Substantial foreign contracts have been taken by the company, chiefly in England and Germany. The company has established foreign offices in London and Hamburg. Further development of export trade by the establishment of additional foreign offices and other means is under consideration, it being regarded advisable first to develop the English and German markets. D. Toscani is in charge of the offices in London and R. H. Wolff at Hamburg. The foreign business of the company is in charge of Vice-President Robert E. Jennings.

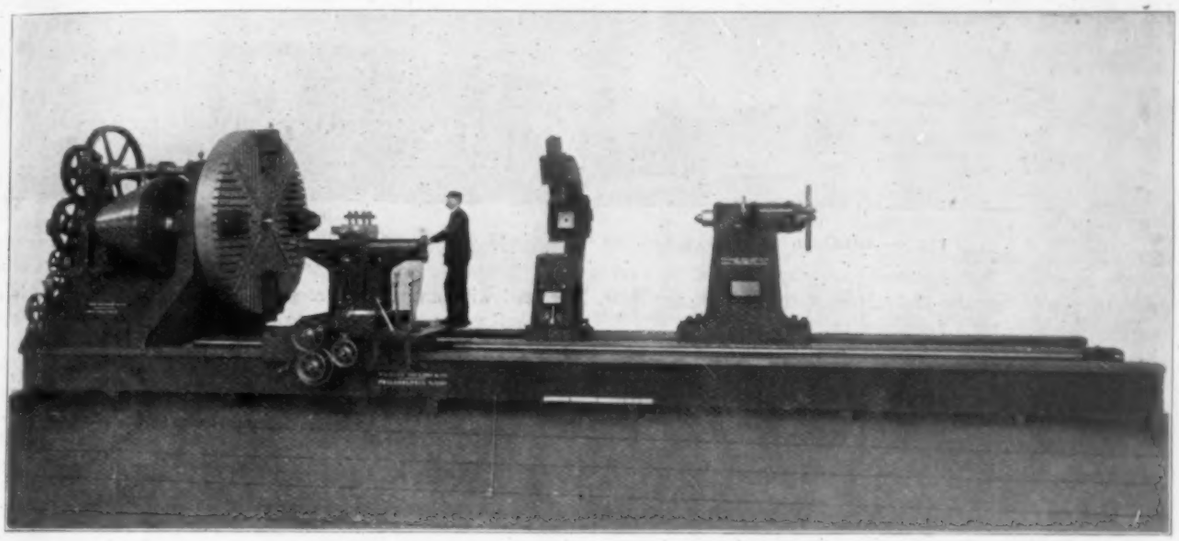
President A. W. Thompson of the Republic Iron & Steel Co. says that no site has yet been selected for the new steel plant which may be erected by the company in the near future. The visit of the Republic officials to their Thomas plant at Birmingham, Ala., gave rise to the rumors that new works would be built there.

The Chandler & Taylor Co., Indianapolis, Ind., has purchased 22 acres of land between the tracks of the Big Four and Vandalia roads in Indianapolis, as the site for its new plant. The first building to be built is the foundry, which will be 160x250 feet, and later a machine shop and boiler shop will be erected. All the buildings will be equipped with modern tools and machinery throughout. It is the intention of the company to abandon its present shops as rapidly as the new buildings are erected.

A 122-INCH LATHE WITH 42-FT. BED.

William Sellers & Co., Inc., Philadelphia, have recently shipped the second 122-inch lathe to the order of the Westinghouse Electric & Mfg. Co., Pittsburg. The two lathes are identical with the exception of the detail that one is motor driven and the other is operated by belting. The motor driven lathe was not conveniently placed for a photograph, but the similarity of the two machines is so close that the one view will easily serve for both.

The massiveness of the machine is readily understood by reference to the workman standing on the operating platform and the scale of feet resting on the blocks supporting the bed. The bed of this machine is 42 feet long and a 30-foot shaft may be taken between the centers. There are three power feeds—longitudinal, cross and angular—with a rapid power adjustment operated by convenient levers. The poppet head is capable of being moved to place by power and the carriage is arranged to run past the poppet head and follow rest. Long tapers are turned by a combination of the cross and longitudinal feeds: shorter tapers may be handled by the swivelling rest which has a long travel of the tool slide on the top surface. The steady rest has heavy box-shaped jaws with



122-INCH LATHE.

removable brass shoes. The face plate is provided with internal cut teeth driven from a pinion on the cone pulley and the driving spindle is arranged to project outside of the headstock so as to permit the bolting of larger diameters to it than the lathe will swing at the other end over the bed. Thus the outer end of the spindle and the machine can be used as a pit-lathe if desired. It will be noticed that the headstock has an offset on the bed and that the arrangement of the internal driving gear permits the lathe center to be placed towards the rear of the machine. The bed is designed with three flat bearing surfaces and the poppet head and steady rest are supported upon two of these and thus come in line with the live center. The screw is supported in bearings on the middle web of the bed and is brought under that portion of the carriage directly resisting the downward thrust. The offset heads are placed so that the pressure of the cut will be thrown entirely within the surface of the bed.

The complete regulation of all the movements of the carriage, the saddle and the cross slide is secured and the rapidity of the movement governed with the greatest nicety, independent of the screw, by the operator from the platform. This is a matter of great importance where the tool is intended to be handled with a maximum economy of time and a loss of time by the workman on a large lathe is proportionate to the machine.

Spiral Riveted Tube Co.

The above company has been incorporated under the laws of New Jersey, a charter having been granted Oct. 10, 1901. The objects of the company are "manufacturing and dealing in spiral riveted pipe machines, spiral riveted pipe, light and heavy sheet iron work, brass and iron castings, including the business of galvanizing in all its branches." The company is the owner of several very recently granted patents on improved machinery for manufacturing spiral riveted pipe, which will enable them to manufacture pipe more rapidly and with greater economy of labor than is now possible. The factory, which will cover a little over an acre of land, will be located in Jersey City, near the corner of West Side avenue, and Fisk avenue, on the Newark branch of the Central Railroad of New Jersey, with a railroad siding running directly through the works. The building for the galvanizing department is now nearly completed and contains a large and modern galvanizing plant. This department will be ready for operation Nov. 1, and it is said that the company has enough contracts already booked for outside work to keep it well employed for many months. Pipe machines capable of turning out pipe of all sizes from 3 inches to 30 inches in diameter are now building at the works of Geo. M. Ball & Son of Brooklyn and will be completed by the time the main building of the plant is finished and ready to receive them. The officers of the new company are as follows: President and treasurer, John A. Wilbur, also president of Salem Nail Co.; secretary, A. Howard Abendroth, formerly of the Abendroth & Root Mfg. Co.; general superintendent, Frederick W. Stapf, formerly with the Abendroth & Root Mfg. Co.

The condition of the Amalgamated Association, as a result of the ill-advised struggle its leaders forced it into, is considerably worse than appears from the bare list of mills in which the association lost control. In the lodges at mills where the association is still recognized technically there is the greatest disaffection, and some are surrendering their charters, such as those at the Morewood tin plate works at Gas City, Ind., and the Shenango Valley Steel Works at New Castle, Pa., while at other plants the lodges are being kept up by only a few members. There is no likelihood that any amount of work will ever bring the organization into the place it once occupied. Its day of usefulness is over, through the changed conditions in the steel mills and the introduction of machinery which prevents the formulation of general scales applicable to widely separated plants. The character of the men's work is now determined more by the kind of equipment at the particular plant than by any general principles applicable to different plants. And as machinery becomes more complex and the loss by breakage or curtailment of output increases, there is greater incentive for men to remain in the job to which they have been accustomed, and the greater need for the employer to keep them there. Both of which influences will tend to curtail the number of floating workmen and insure labor better treatment and more permanent position.—[Tin and Terne.

PLANT OF THE AMERICAN MALLEABLE CASTING CO.

We give herewith several illustrations of one of the latest additions to the malleable capacity of the country, the new plant of the American Malleable Casting Co. which is located at Chicago Highlands, a short distance from Barrington Station, on the Wisconsin division of the Chicago & Northwestern Railway, about 30 miles from Chicago. Additional shipping facilities will be afforded by a belt line which will connect the works with the Elgin, Joliet & Eastern Railway, or, as it is popularly called, the Chicago Outer Belt Line, at Barrington Station. The main building is 541x110 feet, with an annex in the rear 43x212 feet, containing the engine, cupola house and core room. A separate building, 40x110 feet, two stories in height, contains the pattern shop on its upper floor, the lower story being a fire-proof pattern vault.

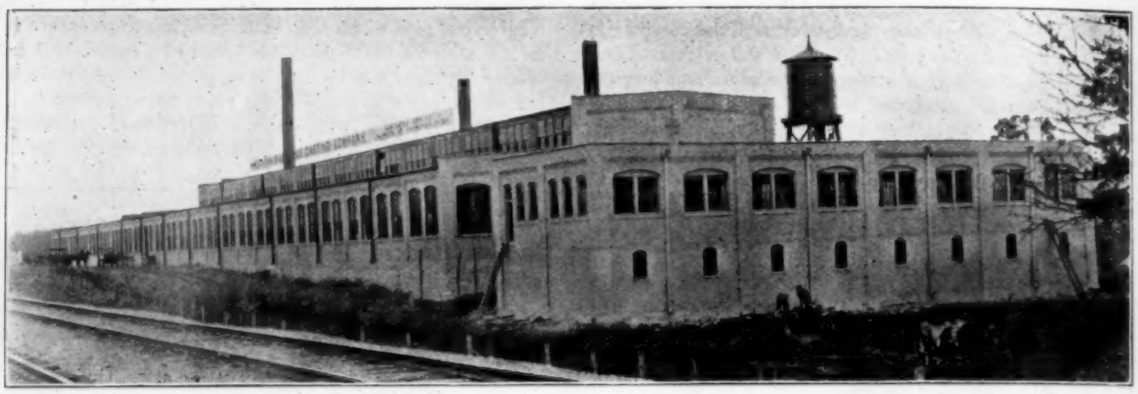


FIG. 1—AMERICAN MALLEABLE CASTING CO.'S PLANT AT CHICAGO HIGHLANDS, ILL.

Fig. 1 gives a fair idea of the external appearance of the plant, which is so arranged that the product moves in a continuous line from the foundry to the shipping room. Railroad tracks extend the full length of the building, with a separate track for the loading platform from the shipping room, thus avoiding any blockading of cars, which is very often encountered when loading and unloading has to be done from the same track. The walls of the main building are 20 feet high and for a distance of 341 feet there extends a lantern 10 feet high and 48 feet wide. The building is divided into a foundry, cleaning room anl annealing room by fire walls running its entire width. The foundry proper is 300 feet long, the cleaning room 40 feet and the annealing room 200 feet. Fig. 2 shows one of the finished annealing ovens in the latter. When completed there will be nine of these, which will be fired from the rear, a flue extending the entire length in front, as is partly shown in the illustration. Instead of using the common brick walls for the openings of the ovens a specially designed cast iron door lined with brick is provided. This not only saves brick but permits of the ovens being opened and closed much more rapidly. Fig. 3 shows the foundation of one of the annealing ovens now being built.

FIG. 2.—ANNEALING OVEN.

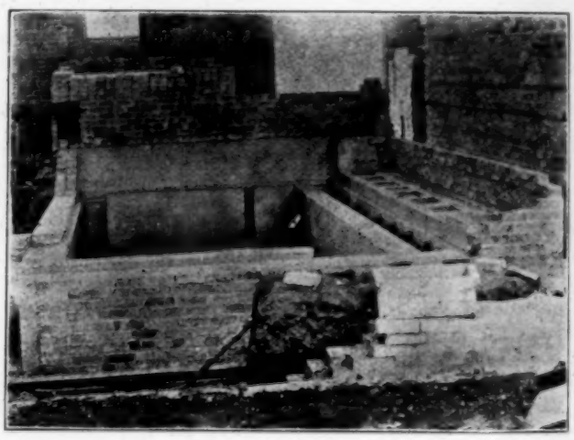


FIG. 3.—FOUNDATION CONSTRUCTION OF ANNEALING OVENS.

The equipment for melting consists of two 15-ton reverberatory furnaces and one 54-inch Whiting cupola, and it is estimated that the plant will have an annual capacity of 12,000 tons of malleable iron and 3,000 tons of cupola iron, the latter of which will be used principally for the annealing pots and other castings required by the firm. Fig. 4 shows this part of the works.

Fig. 5 is a view of the molding shop, the space for bench molders extending the full length of each side of the shop while the central portion is intended for floor work. The plant throughout is very substantially built, and when completed will have every necessary facility, although there is to be noticed an entire absence of the frills, with which it is now so common to adorn new plants.

The power plant consists of two 50-h. p. Maywood gas engines for operating dynamos, pumps and other necessary machinery. The equipment throughout will be electrically driven. In the foundry provision has been made for a 10-ton traveling crane with a 48-ft. span to command the entire length of the shop should the class of work require its services.

The officers of the company are I. L. McCord, president; H. C. Dolph, secretary, and H. C. Duggan, superintendent.

Patent Court Prose and Eloquence.

A patent suit came up before the U. S. Circuit Court of Appeals in reference to an infringement of a bottle-stopping device. From this prosaic foundation the learned judge has derived the necessary standing for a reiteration of the opinion that:

"comparative utility is no criterion of infringement. To negative utility, the defendant must show that the invention will not operate as claimed. The drawings filed with the appli-

cation in the Patent Office are not required or expected to exhibit the exact dimensions of the parts, and if the disclosure is such that an intelligent mechanic would so proportion the dimensions as to secure practical results utility is not negatived by the fact that a device made in strict conformity to the drawings is inoperative. Infringement is not avoided by mere change of form, or renewal of parts, or reduction of dimensions, or the substitution of mechanical equivalents, or the studious avoidance of the literal definitions of specifications and claims, or the super-adding of some improvement."

All this is well enough and the court, after a lengthy recital of the facts, winds up in an eloquent outburst of enthusiasm, swinging serenely from the stopper to the state as follows:

"The inventive idea whereby a bottle-sealing device of great economy of material, great facility in operation, and great stability in maintenance was secured by the joint and coöperating action of elements which had never before been combined to accomplish the same purpose or operate in the same way was entirely original with Painter. Painter's invention is not one of those great epoch-marking discoveries like that of printing or the steam-engine or the electric telegraph, which opened to their inventors the portals of the Pantheon of the immortals. For such as these the love of fame and the glory of being benefactors of human kind served alike as motive and reward; but to the patient laborer in workshop and factory the incentive of fame and glory is absent. For them the stimulus of the rewards offered by our patent laws is needed to encourage by the hope of profit that zealous eagerness to improve processes, to remedy defects in machinery, to invent new methods and appliances for saving labor and cheapening production in the numberless articles that are in daily use. It is this stimulus that has made the American mechanic the most alert, observant, and studious of any in the world, and it is the indefinite multiplication of these small inventions and improvements that has wrought an industrial revolution and brought his country to the fore-front of the world's commerce. It was the consciousness that in the knapsack of every private soldier there might be the baton of a marshal of France that inspired her soldiers to unparalleled achievements. In our unheroic industrial age the central processes of a nation's life lie in production and distribution. The protection and hope of profit held out by our patent laws inspires that stimulating energy which leads to experiment, invention, and all the resulting benefits. A refusal of that protection in a proper case will deaden and destroy it."

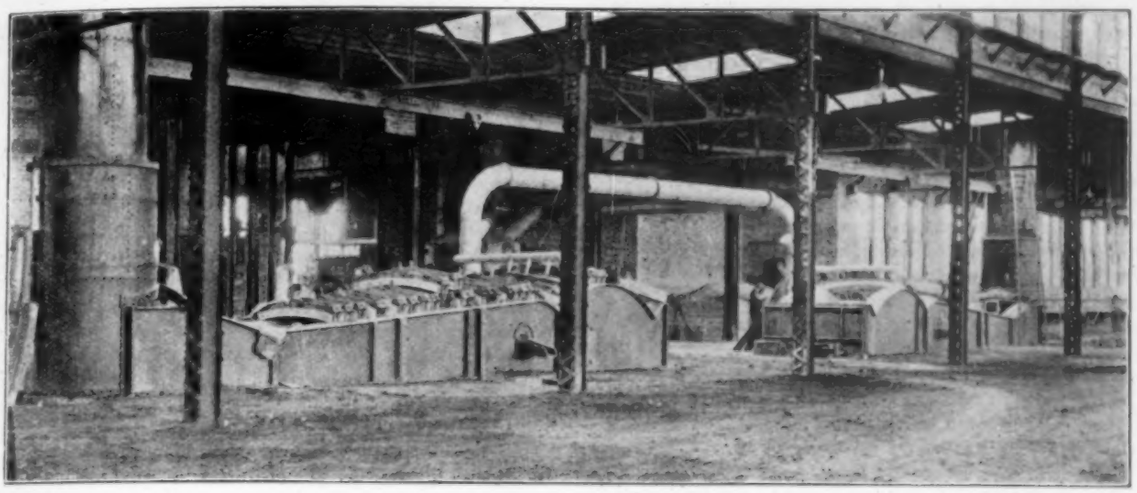


FIG. 4.—REVERBERATORY FURNACES.

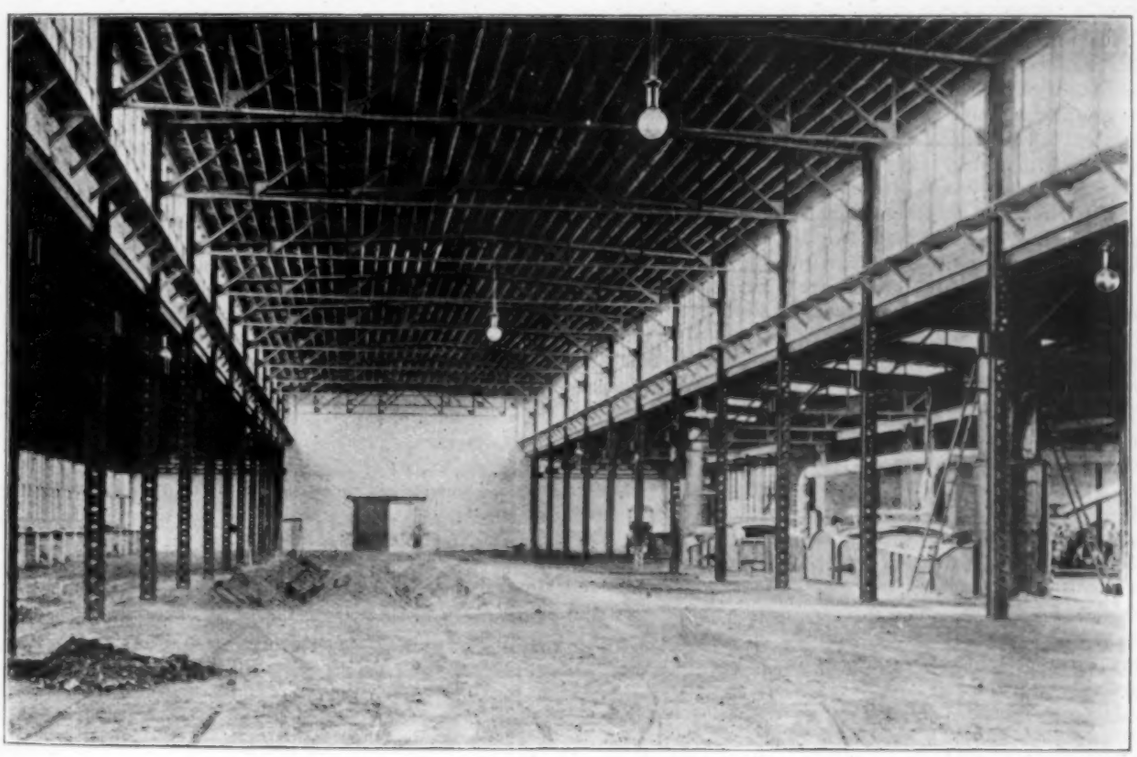


FIG. 5.—VIEW OF THE MOLDING SHOP.

COLOROMETRIC ESTIMATION OF MANGANESE.*

BY HARRY E. WALTERS.

Almost everybody who has used lead peroxide in the colorometric estimation of manganese has wished for a substitute which would dissolve completely in the acid solution, thereby allowing the comparisons to be made as soon as the solutions are cool. In the former method it is necessary to use a centrifugal machine or allow considerable time for the finely divided lead to settle. The substitute should be as cheap, or nearly so, act as rapidly, and be fully as accurate. The writer has made a few experiments in the past with different substances, but without success, until, acting on a suggestion of Mr. Hugh Marshall's, which appeared in the *Chemical News*, Vol. 83, No. 2151, that ammonium persulphate could probably be used for the quantitative estimation of manganese colorometrically. Some of the salt was obtained and experiments instigated to find the proper procedure.

In all attempts to use the salt in solution in conjunction with the nitrate of silver (which is essential), the results were not satisfactory, owing to the slow decomposition of the persulphate, or the precipitation of the silver as peroxide, but where the salt was used direct with the requisite amount of nitrate of silver, very satisfactory results were obtained.

As the presence of a silver salt is essential for the oxidation of the manganese to permanganic acid, experiments were made to find the amount which should be present, and finally it was found that where .02 gram of nitrate of silver was present the oxidation was complete. If much less than this be used the oxidation will not take place, and, if too much be present, silver peroxide will separate and give an off-colored solution difficult or impossible to compare.

Finally the following scheme was adopted: 0.2 gram of the test steel, and a standard steel of known manganese contents, are weighed off into suitable test tubes; 10 c. c. of nitric acid of 1.20 sp. gr. are added to each. The tubes are placed in a water bath and heated until dissolved, and all nitrous fumes are driven off. Fifteen c. c. of a solution of nitrate of silver equal to .02 gram $AgNO_3$ (1.33 grams of the salt to one litre of water) are added to the tubes in the bath. This will cool the solution considerably. Now add immediately about one gram of ammonium persulphate salt to each and continue warming until the oxidation commences, and then for about a half minute longer. Remove the tubes from the baths while the evolution of oxygen continues and place in a cold water bath. When solutions are cool, which will require but a few minutes, they are compared as usual. In case the manganese is high in the sample, 0.75 per cent and upwards, O.1 gram of the sample is taken.

The procedure for pig irons and blast furnace cinders is the same as for steel until the sample is dissolved, except that the cinders should be moistened before the addition of the acid, when in solution they should be filtered in order to free them from the suspended matter. The paper is then washed, using the 15 c. c. of nitrate of silver solution as the wash, and the procedure continued the same as for steels. If this filtration is not made, the suspended matter (the carbon or silica), which in the old method is mechanically separated by the lead peroxide, would give an off-color to the solution. In dissolving shot or chilled iron samples, it has been found good practice to add a little persulphate to the acid solution. This will destroy the combined carbon and aid the solution of the sample.

The following comparative results by the lead peroxide and ammonium persulphate methods show how well the results agree.

	Lead Peroxide. Per cent.		Ammonium Persulphate. Per cent.
1	.33	Steels.	.33
2	.38		.39
3	.40		.39
4	.47		.46
5	.58		.58
6	.67		.67
7	.75		.75
8	.80		.80
1	.32	Pig Irons.	.30
2	.65		.65
3	.65		.65
4	.70		.69
5	.71		.70
6	.77		.75
7	.98		.98
8	1.02		1.02
1	.23	Cinders.	.24
2	.30		.32
3	.32		.32
4	.35		.36
5	.40		.40
6	.49		.50
7	.70		.72
8	.72		.75

In making up the nitrate of silver solution it is preferable to make a stock solution by dissolving 33.25 grams of the salt in a half litre of water. Ten c. c. of this diluted to a half litre will give the solution as used.

During the course of experiments one interesting peculiarity of the salt was observed. While this peculiarity may be confined to this particular lot of the salt in question, it may be worth while to mention it to save others from the aggravation it caused us, and that is that when the salt is damp the reaction is very sharp and quick, but, when dry, it is very incomplete and irregular and not to be depended upon. Ten one pound bottles of the salt was the original order, and as soon as it was received the experiments were immediately commenced, correct results being obtained from this bottle and the following one. The balance had been stored in a rather warm place, and on opening the third bottle for use, trouble immediately commenced. After exhausting all seemingly possible and impossible causes, it was finally remembered that the salt in the previous bottles was damp, and 10 c. c. of water were added to the bottle and intimately mixed with the salt. The trouble immediately disappeared. On drying some of the same salt it reappeared, so that now, a day or so before use, 10 c. c. of water are added to each one pound bottle of the dry salt.

The advantages claimed for the ammonium persulphate method are: 1st. All the solution is obtained, there being nothing from which to decant, and the tube can be rinsed into the comparing tube. 2d. Only one-third as much acid is used as for the lead peroxide method. 3d. The small size of the test tube that may be used—a one-inch by eight-inch tube replacing a one-inch by ten-inch tube, previously used, at only one-half the cost. 4th. As the oxidation takes place below the boiling point of water, a simple water bath can be used for the entire operation, thereby doing away with the heating over an argand burner, or hot plate, or the use of a calcium chloride bath, with the result that the breakage due to these higher temperature is considerably reduced. 5th. It is neater, quicker, and fully as accurate.

The use of the silver salt does not create much expense, as one gram will make fifty determinations. The present price of the ammonium persulphate is $1 per pound; in ten pound lots or more, 85c per pound. If the use of this method should become extensive, thereby creating a demand for the salt, it is reasonable to suppose that these prices would be greatly reduced. The comparative cost per hundred determinations, using the quotations of a local supply house, would be: Ammonium persulphate method, 33.8c; lead peroxide method, 50.8c; using the quotations obtained by one of the mill laboratories, the cost would be: Ammonium persulphate method, 29.9c; lead peroxide method, 38.3c.

In conclusion, I would say that the method has been in use for some time at the laboratory of the Duquesne Steel Works and blast furnaces, and has given perfect satisfaction for all ranges of manganese. The persulphate is also an excellent substitute for bromine in the oxidation of manganese in alkaline solutions. It has been found good practice to add the salt direct to the boiling solutions. I also wish to acknowledge my thanks to Mr. J. M. Camp, chief chemist at the Duquesne laboratory, for many valuable suggestions in the writing of this paper.

* Paper read before the Chemical Section of the Engineers' Society of Western Pennsylvania, Pittsburg, Pa., at September meeting.

R. J. McIntyre will erect a foundry at Allentown, Pa., 46½ x104 feet.

TRADE PUBLICATIONS.

The Pratt & Whitney Co. of Hartford, Conn., has a new catalogue of small tools, standards and gauges. The publication is 4¾x7¼ inches and is profusely illustrated with excellent halftones of the various small tools made by this company. Many of these have been mentioned already in the account of the exhibit of the Pratt & Whitney Co. at the Pan-American Exposition. The catalogue contains some useful tables as well as a brief account of the bar iron, coupler, wheel-center and tire gauges of the Master Car Builders' Association and the American Railway Master Mechanics' Association.

A neat booklet has been prepared by Baker & Co., platinum refiners, Newark, N. J., for the description of the construction and use of the recently patented Tucker combustion apparatus. This apparatus is designed for the purpose of accurately determining the total ash of any organic matter. It may also be used to advantage for the dry distillation of substances and for making qualitative determinations of the volatile ingredients of ash obtained from various materials as well as of other matter than ash.

A 7¼x5 catalogue is being distributed by the Watt Mining Car Wheel Co., Barnesville, O. Every page has one or more finely finished illustrations of the plant and product of this company. The firm manufactures mine cars complete, mine car irons, steel mine cars, ore cars, mine car wheels and axles, the Watt patent self-oiling mine car wheels and the patent channel bar attachment for round axles.

A folder detailing the specifications of the 1901 designs in milling machine construction is sent out by the R. K. Leblond Machine Tool Co., Cincinnati. Four sizes of plain milling machines and three sizes of the universal type are illustrated together with a view of the shop. We learn that the business was established in 1887 and incorporated in 1898; that there are 148 machine tools in operation at the plant at the present time.

Automobile circular No. 4 explains the material and merit of Dixon's graphite preparations for steam, gas and electric automobiles and submits some interesting letters from users of the productions of the Joseph Dixon Crucible Co. of Jersey City, N. J.

The National Elastic Nut Co., Milwaukee, Wis., has described the construction of their product in a small eight-page circular. The nut is made by bending a flat thin bar around into a ring and then pressing this ring in a hexagon die. This hexagonal blank is then tapped out slightly (1/128-inch) undersize. During the three years the nut has been on the market a number of testimonials have been received and a selection of these are given in the circular.

The simplicity of the new file handle manufactured by the Nicholson File Co., Providence, R. I., is exploited in the "Five Facts" enumerated in leaflet form. Every machinist or other user of files will be interested in the reasons why the file is firmly held without a ferrule on the handle and how the two will drive together in line and cannot easily be joined otherwise.

The catalogue of the Standard Roller Bearing Co., Philadelphia, is standard size, 6x9, treating upon the construction and application of ball and roller bearings to shafting, automobile running gears, and thrusts for propeller shafts and water wheels, etc. A number of facsimile testimonials are submitted in reference to the results obtained in practice.

Catalogues 8 and 9 refer to the line of standard derrick fittings and hand power hoists and winches manufactured by the Dobbie Foundry & Machine Co., Niagara Falls, N. Y. These catalogues go into the constructive details freely with prices, measurements, code words, etc. Every facility is thus afforded the recipient of the list for comparisons of cost. The same company manufactures a line of steam hoisting engines, boilers, tanks, etc.

New England Foundrymen's Association.

The New England Foundrymen's Association passed its regular monthly meeting for October to accept an invitation from the General Electric Co. to visit its works at Schenectady, N. Y., on October 17. The party arrived at Schenectady early Thursday morning and until noon devoted their entire attention to the several foundry buildings, and the afternoon to a general inspection of the balance of the company's immense plant. Luncheon was served in the company's dining room at which the following gentlemen were seated: George B. Buckingham, Arcade Malleable Iron Co., Worcester, Mass.; Alva Carpenter, A. Carpenter & Sons, Providence, R. I.; W. A. Saunders, A. Carpenter & Sons, Providence; J. S. White, J. S. White & Co., Providence; E. J. Lyons, Brown & Sharpe Mfg. Co., Providence; G. H. Gibby, Condor Iron Co., East Boston, Mass.; E. E. Warner, G. F. Warner, New Haven, Conn.; W. W. S. McMultan, Richmond Stove Co., Norwich, Conn.; C. H. Van Stone, Walworth Mfg. Co., Boston; Theo. Colvin, Colvin Foundry Co., Providence; James Tierney, H. B. Smith Co., Westfield, Mass.; William Doherty, Doherty Bros., Lowell, Mass.; F. F. Stockwell, Barbour-Stockwell Co., Cambridgeport; E. C. Osgood, Osgood & Witherill, Charleston, Mass.; Arthur Shields, Shields Foundry Co., Mansfield, Mass.; D. F. Egan, Henry E. Pridmore, Chicago; G. E. Emmons, manager Schenectady works, General Electric Co.; W. T. Clark, assistant mechanical superintendent, Schenectady works; D. C. Warren, *The Iron Trade Review*, New York.

Industrial Expansion at Youngstown, O.

Outside of the Pittsburg district probably no territory in the country is expending as large an amount in the erection of plants for the production of iron and steel in various forms as Youngstown, O., and the immediate vicinity. New plants, improvements and enlargements projected thus far this year will cost nearly $4,000,000, and the city is making great strides in the line of iron and steel production.

The Youngstown Iron Sheet & Tube Co. is the largest enterprise launched this year, having a capital of $2,000,000. Sheet iron and steel will be rolled the first of the year while the skelp and tube mills will be placed in operation in the spring of 1902.

The Youngstown Mfg. Co., with a capitalization of $400,000, is erecting a plant near Struthers for the manufacture of nuts and bolts. The company is also considering the advisability of taking up the manufacture of a patent steel car.

The Youngstown Iron & Steel Roofing Co. recently placed in operation its new sheet mill which cost no less than $250,000.

About the first of the year the Republic Iron & Steel Co. will place in operation two new modern billet mills at its Bessemer plant.

The Mahoning Foundry & Machine Co. will erect a new plant to cost $100,000.

The W. B. Pollock Co. has under construction a new plant, which will represent an outlay of about $100,000.

The William Tod Co. is building a new foundry and erecting shop.

The Walker Engineering Co., recently incorporated, will shortly erect a foundry and machine shop.

The future of Youngstown as an iron and steel manufacturing center grows brighter every year.

The plant of the Curtis Sheet & Corrugating Co., Zanesville, O., is rapidly nearing completion and it is probable that the first sheets will be rolled before the end of November. All the buildings are completed and the machinery is being installed. The main building is 300x105 feet and is of steel construction. The roofing department will be located in a building 200x100 feet. The electrical power house is 60x40 feet, while the boiler house is 90x40 feet. These buildings cover about 12 acres of ground, although the tract owned by the company comprises 35 acres. It is estimated that the total output of the plant will be about 10,000 tons per year.

The Chester Iron & Steel Co., organized at Chester, Pa., has secured the long idle plant of the Combination Steel & Iron Co. and will operate the same under the management of John McFadden. Others interested in the venture are P. Haliday, F. F. Vanderfort, H. P. Nash, H. Whittemore and Charles Dreifus of Pittsburg.

A MODERN AXE MANUFACTURING PLANT.

Interest attaches to the plant of the Kelly Axe Mfg. Co. of Alexandria, Ind., since that company is probably the most conspicuous competitor of the consolidation of axe works. The methods of the company are noteworthy and the manufacturing side of the business has been developed in a conspicuous way. The business was established in Louisville, Ky., about 30 years ago. The growth has been steady and today the plant at Alexandria is known as the largest single works in the world devoted to the manufacture of axes. When W. C. Kelly established the first plant in Louisville he em-

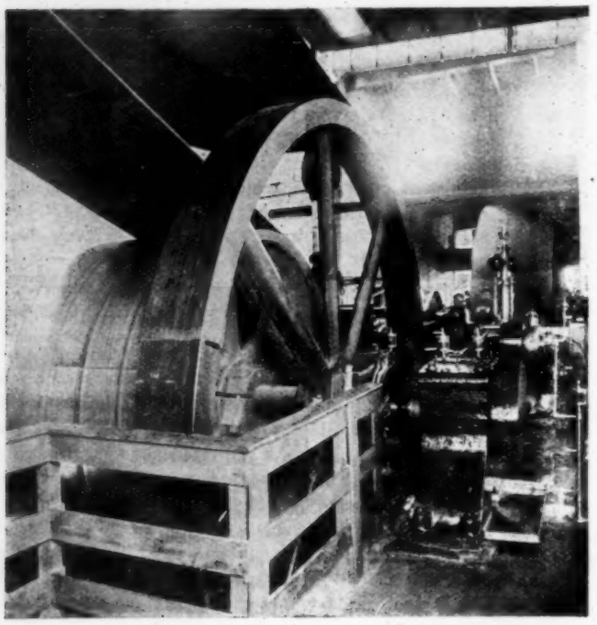


FIG 1.—ENGINE ROOM KELLY AXE MANUFACTURING COMPAN SHOWING TWO OF THE FOUR 500-HORSEPOWER ENGINES

ployed only six workmen. Growth was almost uninterrupted. Eight years ago, soon after the discovery of natural gas in Indiana the plant was removed to that city. This step was taken chiefly because of cheap fuel and because of the even high temperature which made possible a better temper of the steel. Another feature having weight with Mr. Kelly was the climate. In the South the hot nights of the summer made it impossible for the men to gain refreshing rest, thus unfitting them for the best work. In Indiana it was found that while in the summer the days are hot, the nights are cool, enabling the workmen to secure sleep of the kind that restores their energies.

The output in 1896 was 36,000 dozen axes. Increased demand caused the concern to enlarge its factory so that in 1899 the capacity was 12,000 dozen axes per month, or 144,000 dozen per year. This vast number of axes was being manufactured right along until in August, 1900, when the plant was burned down.

The fire, while in one sense a disaster, in another was a benefit. It resulted in the erection of a new plant far superior to the old one, with a capacity of 10,000 axes and 2,000 scythes per day, the company starting manufacturing early in the present year. This output can be doubled with two shifts of men, making a 16-hour run.

In the new factory the facilities for producing goods economically have been increased as could not have been possible in the old plant. The buildings are principally of steel and stone, the parts of wood being slow burning construction, and occupy a 35-acre tract of land about one-half of which is occupied. It is heated and ventilated throughout by the fan system.

A difficulty in the manufacture of edged tools that was formerly deemed insurmountable was the dust arising from the grinding stones. The new Kelly plant is provided with an elaborate and costly device which eliminates this dust by a system of exhaust fans and pressure blowers. In consequence this department is just as agreeable to the employes as any other.

About ten years ago the principal manufacturers of axes in the country consolidated into one concern. The only large concerns that did not go into the combine were a firm in the East and the Kelly Axe Mfg. Co. Since this time the most lively competition has existed between the consolidation and the Kelly concern.

About two years ago all the scythe makers in the country also formed an association and advanced prices. This was the cause of a great deal of friction in the trade, and the result was that the Kelly company built a large scythe factory, and is now producing a large quantity of scythes at lower prices than the association; at the same time this has not seriously disturbed the market.

The magnitude of the enterprise may be better understood from the fact that the company pays out annually for wood to supply axe handles, the sum of $50,000, and for grindstones more than $30,000. It employs constantly between 800 and 900 men, and has a paid in capital of $2,000,000. The product is sold not only throughout the United States, but in Canada, Australia, South Africa and Europe, including Russia and Sweden in particular. The Kelly axes have practically no competition in Europe. The machinery equipment is modern in every respect, and the entire power transmission machinery used in the plant was furnished by the Dodge Manufacturing Co., of Mishawaka, Ind.

Foreign Conditions and Prosperity at Home.

In his weekly review of the financial world in the New York *Tribune*, Cuthbert Mills writes as follows on a question that is having consideration in the effort to discover possible interruptions to our present prosperity:

"The falling off in copper exports has direct relation to the state of affairs abroad, which is bad. Germany was our great consumer, and Germany is in about as doleful a state as we were in the despondent years following the great collapse of 1873; or in the dry rot times after 1893. She is a poor customer for us now. In England, the situation is better, but y,not specially cheerful. Not only copper, but our exports of

FIG. 2.—ONE OF THE ELEVEN GRINDING ROOMS OF THE KELLY AXE MANUFACTURING COMPANY. STONES DRIVEN FROM SHAFTING LOCATED IN PITS BELOW.

iron and steel are in danger, from the poverty of our foreign customers. Meantime, while the foreign trade balance has made a monthly exhibit in our favor, it is now becoming patent to all, that in the spring, while the stock market was at its highest, we were borrowing millions upon millions in Europe; and it is a question how long our excess of merchandise exports will avert a very considerable outflow of gold. Yesterday's bank statement showed an increase of loans attributed to foreign exchange operations; which means, that the loans made abroad are coming due weekly, and the borrowers are paying them off with money borrowed here."

SUGGESTED AT THE SHOP.

BY F. O. REMAN.

The present has more attraction for me than speculating about the future or regretting the past; and work, with a fair share of recreation, keeps me clear of some of the avenues leading to trouble outside the shop. Now and then some point comes up for consideration that has no very direct bearing on my own work but has a sort of relationship to the trade that

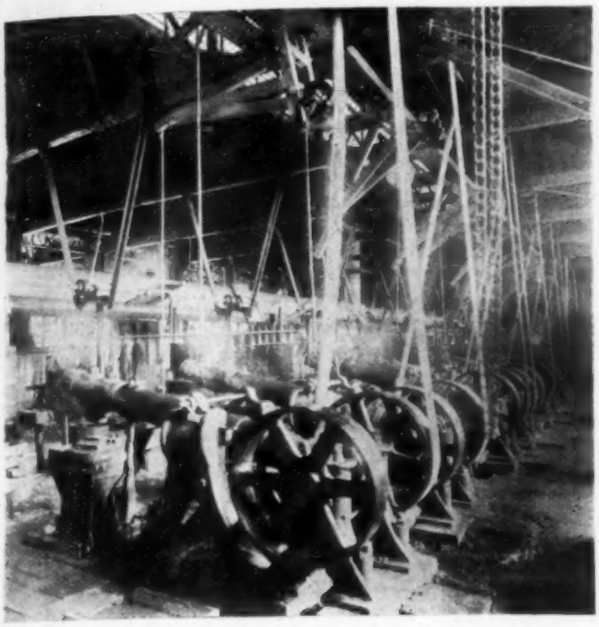


FIG. 3.—THE FORGE SHOP.

serves as an excuse for a discussion of its peculiarities. The problem I now have in mind is worrying one of my acquaintances far more than it is ever likely to interfere with my comfort, and for that reason I may give his point of view as nearly as I am able to express it.

* * * * *

He points out the fact that the educational bait is being held out to many young men who are led to see in it the means of attaining a higher position in the shop; not that they will simply become more skillful workmen, but as a means to being foremen, superintendents or owners of shops. From the very nature of the case these must form a very small percentage of the number employed in workshops and hence many must continue as machinists or go into another field of industry. My friend lays a lot of stress upon the contrast between the office and the shop, the cleanliness of the one and the grime of the other, and looks forward to a time when the shops will find it difficult to get labor of the calibre to work up into good journeymen machinists.

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Now it is just possible for a man to see too far. This turning of the telescope into the future may be all right in purpose and yet the vision of the user may be lacking in accuracy. The prophet has always had a chilly reception among his own people and has had to hunt up some other job in order to eat with any degree of regularity. Before the prospect raised by my acquaintance may cast any great amount of gloom in my direction it will have to rest upon something more than supposition, anyway. It is true that we cannot all hold positions of authority in shops, or anywhere else, but I cannot conceive of a future in which there will not be a market for the machinist—more especially if the fainthearted fall by the wayside, as my friend suggests.

* * * * *

Machinery is the necessity of a land where labor is well paid. The higher the wages, the greater the pressure forcing machinery to do more. The fewer the workmen and the greater their worth, of course. If my friend's anticipations are realized we shall have an increasing need for men and a dearth of material to make machinists now. This may work badly in other trades or professions, but the need for mechanics in the shop would increase the renumeration offered and it is not likely that the trade would long go begging.

* * * * *

There is not only an increasing need of greater developments along the old lines, but new ones are constantly created. Larger locomotives, all metal cars, greater steel structures float as steamships, span rivers and lift business above the noisy streets into the skyscraper. All these have brought grist in manifold measure to the mill of the machinist.

Most of us have seen the growth of the electrical industry; the multitude of brass fittings calling for screw machines and formers of every description; the dies and strippers for the sheet metal work on armature blanks, lamp sockets, switches and the like; special tools for the field work on motors and dynamos; fixtures and jigs for commutator drilling, milling and turning; forms and bending tools for windings. .

* * * * *

Compressed air has blown in upon the machinist and already drills, hammers and many other tools, including all-metal paint brushes, demand his attention. Inventors are anxious to have him get to work on all sorts of schemes from clocks to cupolas.

Some of his work will be done later by machinery. There is no doubt about that result; the rule works, so far as the machinist is concerned, as it does with cobblers. The cobbler does not build shoemaking machinery, however, and that is just where the all important distinction comes in.

* * * * *

Labor-saving machinery must take the place, to a certain extent, of men who run machines. The more nearly it substitutes mechanism for the hand and eye of the operator, the more exact its imitation of skilled handicraft, the greater the requirements upon the designer and the machinist. The linotype machine, the sewing machine, the screw machine, the typewriter and many other things have extended the scope

FIG. 4 —ONE OF THE TWO POLISHING ROOMS OF THE KELLY AXE MANUFACTURING COMPANY. SHAFTING CARRIED IN PITS BELOW.

of the worker upon high-grade automatic machinery and have offered opportunities to machinists.

* * * * *

The pressure is likely to be kept up with the extension of trade, increase of luxuries and the progress of invention. There is also growing a most commendable practice of scrapping machinery that is not up to date; throwing it out of the way and encouraging the shop force by the elevating influence of new tools. Maybe my friend's imagination can look ahead to a time when there will be a wail for the missing machinist, but I don't see it that way. It is far more likely, from my view of the matter, that the machinist of that generation will be doing business at the old stand and putting out all the work he can produce for the wages offered by the best bidders.

Tne Industrial Commission on Labor Disputes and Arbitration.

(Special Telegram.)

WASHINGTON, D. C., Oct. 21.—The Industrial Commission has just issued a summary of its report on labor disputes and arbitration, the portion relating to labor organizations having appeared ten days ago. The part of the main body of the report which relates to the labor disputes and arbitration will cover approximately 350 pages. The text has been written by Charles E. Edgerton and E. Dana Durand. The information regarding methods of arbitration, etc., has been obtained directly from those connected with the various systems in the United States. In commenting upon the growing tendency to substitute for strikes collective bargaining, conciliation and arbitration the report says:

"Perhaps no other question relating to labor has attracted greater attention in the United States in recent years than that of the methods of securing more peaceful relations between employers and employes. There is a growing feeling on the part of workingmen, employers, and the general public that the determination of the conditions of labor by open conflicts, strikes, and lockouts, is in most instances unduly expensive, and that it tends to create unnecessary friction between employers and employes. Not only do both the employers and employes suffer from the loss of working time and interruption of business which come from strikes and lockouts, but the convenience and comfort of the general public are in many instances seriously interfered with. The ill feeling which too often accompanies open rupture between masters and men is not the least of the evils of strikes and lockouts. Widespread and growing interest accordingly is manifested in the subject of methods which shall tend to prevent, so far as practicable, the actual cessation of employment on account of differences concerning the conditions of labor, or which, in case employment is actually interrupted, may facilitate early and peaceful settlement.

"The result of this growth of public sentiment in favor of more peaceful methods of determining the relations of employers and employes in the United States is shown by the rapid increase in the number and effectiveness of the organizations and methods seeking this end. One conspicuous movement of recent years has been that toward the enactment of legislation seeking to establish methods of arbitration, conciliation, and mediation. In a considerable number of States laws have been passed providing for permanent State boards of arbitration, and while in some of the States the laws have been almost dead letters, several of the boards thus established have accomplished noteworthy results. In other States the legislatures have passed statutes encouraging the formation of local boards of conciliation and arbitration, a measure however, which seems to have proved almost uniformly of no avail. Even more important than these legislative enactments is the movement toward the voluntary establishment of methods of 'collective bargaining,' or conciliation and of arbitration, within the various trades themselves. In many trades the conditions of labor in not a few localities are determined by conferences between employers and employes, or between representatives of organizations of employers and employes. These conferences often result in written agreements prescribing the terms of the labor contract for a given period of time. The practice is also growing of referring disputes, especially those relating to the interpretation of the labor contract, to committees representing the employers and employes, while in many instances impartial umpires or arbitrators are called in to settle matters as to which such committees can not agree. The most conspicuous manifestation of the movement in favor of more harmonious relations between employers and employes is found in the systems of conferences and joint agreements covering trades throughout the entire country, or throughout large sections. In most of the 10 or 12 trades in the United States in which such wide-reaching systems exist they have been established within the past 15 years, while fully half of the systems date back not more than five years."

Collective Bargaining in Metal Trades.

Under the head of "Methods of Organizations and Procedure in Collective Bargaining" the report goes at length into the practice in the trades which "lay most stress upon collective bargaining as distinguished from conciliation and arbitration—the mining, iron and steel, glass and longshore trades." We quote as follows:

"In the case of the iron and steel and the glass trades the representative character of the conferences by which the annual agreements are reached is secured largely by the establishment of separate or branch committees for the distinct branches of the trade. These branch committees themselves usually consist of a considerable number of persons, ranging from 5 to 20 or more. They negotiate separately in the first instance as regards matters concerning their respective branches, but usually, if they fail to agree, reference is made to a general committee, which in most cases is composed simply of all the branch committees acting together. "In two trades general agreements have been adopted by relatively small numbers of representatives. Thus in the stove foundry trade the collective bargaining is intrusted to the same 'conference board,' composed of the presidents of the national organizations of employers and employes and of three other persons on each, which arbitrates in minor disputes. It is probable, however, that other representatives of the respective organizations also attend the conferences, but with no voting power.

"As already pointed out, the conference of the National Metal Trades Association and the International Association of Machinists, which met in May, 1900, besides establishing a system of conciliation as to minor matters, adopted an agreement defining part of the terms of the labor contract throughout the country, but leaving the settlement of wage scales to the local districts. It seems not improbable that one of the chief reasons why this system broke down so soon was because this agreement was drawn up by a few executive officers of the respective organizations of employers and employes, and not by a widely representative conference. It appears that some of the terms of the agreement were but little understood by many of the local unions, and certainly were by no means approved by them. It is even asserted by the National Metal Trades Association that the officers of the machinists' organization permitted garbled copies of the agreement, omitting some of the unpopular clauses, to be circulated among the local unions, while it has been suggested by representatives of the International Association of Machinists that there was an understanding with the employers that some of the terms of the agreement were to be kept confidential between themselves. If either of these statements is correct, the disastrous results which followed serve to emphasize the desirability, almost the necessity, that collective bargaining regarding the conditions of labor of scores of establishments and thousands of men should be carried on by the most thoroughly representative conferences, with thorough publicity. Had each local union been represented in the machinists' conference of May, 1900, the very same terms of agreement might perhaps have been reached, but they would have been understood and approved generally, and there would have been much less difficulty in carrying them out.

"An interesting question as to the conferences between employers and employes regarding the general terms of labor contracts involves the extent to which the committees on each side are granted authority to reach a binding agreement without further reference to the organizations by which they are chosen. As we have pointed out, there are no written permanent agreements prescribing the powers of these joint committees in the trades under consideration. The constitutions of organizations of employers and employes which participate in these systems usually do not definitely authorize their committees to enter into binding agreements directly, and sometimes specifically deny them that power. The constitution of the Amalgamated Association of Iron, Steel and Tin Workers indeed grants to the conference committees of the union no power to depart from previous instructions of the annual convention, though the committees may refer back questions to general referendum vote. Practically the same is true in the glass trades. In practice the action of conference commit-

tees on each side in these trades is more or less independent. The committees of course act under the instructions of their organizations as to the demands which should be presented, but they are permitted to make concessions in order to reach an agreement. Sometimes, to be sure, no agreement is reached and a strike ensues. It is especially convenient in many ways to have the joint conferences themselves, as in the coal mining and longshore industries, so widely representative of their organizations that reference to other methods of ascertaining the will of the constituents shall be unnecessary. The referendum vote by local organizations is apt to be an especially cumbersome affair, tending to delay the reaching of an agreement."

Agreements as to Conditions of Labor.

"The agreements between the Amalgamated Association of Iron, Steel, and Tin Workers and their employers consist chiefly of piecework wage rates based upon the sliding-scale system. This is the only trade in the United States in which sliding scales have been permanently introduced. As the prices of bar iron, steel, tin plate, etc., vary, the rates paid to different classes of workingmen for producing a ton or other given quantity of the product vary in a definite ratio. Thus, by a recent agreement covering the manufacture of sheet steel, fixed rates for doing various classes of work were established on the basis of a price of 2½ cents per pound for certain classes of sheet steel. With each advance of one-tenth of a cent (equal to 4 per cent on the base) wages were to go up 2 per cent, and for each decline of one-tenth of a cent they were reduced 2 per cent. Both employers and employes have usually seemed to be well satisfied with the working of the sliding-scale system, although the workingmen insist upon the establishment of a minimum below which wages shall not fall, holding that, while it is possible for an employer to go without profits, it is not possible for a laborer to go without living wages.

"The agreements made between the Tin Workers' National Protective Association and the tin plate manufacturers are somewhat similar to those of the Amalgamated Association, but do not provide for the sliding-scale system.

"In the case of the Stove Founders' National Defense Association and the Iron Molders' Union we find the somewhat unusual practice of establishing certain rules regarding the conditions on which labor shall be performed by permanent agreement, while wage scales and other matters are left to the annual agreement. The most important of these permanent provisions relate to apprenticeship and to the tools which shall be furnished workmen by the employers. Others provide for the fixing of piece prices on new articles not covered by the general scale and for other similar matters.

"Several of the general agreements in the trades under consideration contain provisions of some sort with reference to the position of union men. In the glass trades and (at least prior to the strike of 1901) in the iron and steel trades, so far as the labor organizations are recognized at all in the establishments, only members of the organizations are employed. In one or two cases a clause to this effect exists in the written agreement, but in other cases apparently this is considered superfluous. The recent great strike of the Amalgamated Association, as is well known, turned in part on the question of the extension of the organization into mills which were previously non-union. It will not be appropriate in this connection to discuss the propriety of the position taken by either side. It appears, though newspaper accounts differ, that the Amalgamated Association desired to compel the United States Steel Corporation to sign agreements and scales covering uniformly all the plants controlled by the corporation in certain branches of the trade. It is stated that the Amalgamated Association subsequently modified the demand that all the men in the plants hitherto non union should be forced to become members of the union, but insisted only that the association should have the privilege of attempting to organize them, and that the scale fixed by the joint agreement should be apply to all men, union and non union, alike.

"The general agreements in the stove foundry and foundry trades contain no provisions regarding the exclusive employment of union men, and as a matter of fact non union men are in some instances employed side by side with union men. The agreement of the machinists, adopted in May, 1900, contained a distinct provision that there should be no discrimination against union men, but that the union would not insist on their exclusive employment. The disapproval of this latter provision by many of the local unions was perhaps in part instrumental in bringing about the breaking up of the agreement system in this trade. In the agreements of the longshoremen there are clauses providing that only members of the union shall be employed, unless the union is unable to furnish a sufficient number of competent men. The interstate agreements in the bituminous coal industry have nothing to say about the rights of union men, but the scales provided apply to all employes whether members of the union or not. Apparently in many localities and districts the union succeeds in enforcing the demand that only its members shall be employed as miners, and the Illinois State agreement by implication seems to concede this demand."

Arbitration as to Specific Disputes.

"In the iron and steel trade the constitution of the Amalgamated Association of Iron and Steel Workers directs the formation of mill committees to represent the employes in dealings with employers as to minor matters. Manufacturers who enter into agreements with the organization bind themselves to recognize this mill committee. In case of failure to reach a settlement locally the matter is to be taken up by the district officers of the Amalgamated Association in connection with the mill management. Although there is no provision for ultimate reference to a formally constituted joint board of employers and employes or to an outside arbitrator, it is stated that the spirit of employers and employes is usually such as not to tolerate a cessation of work on account of local differences in plants where the Amalgamated Association is dealt with. In the manufacture of bar iron an adjuster is employed by the associations of employers and employes, whose duty it is to investigate differences as to the prices of products which become the basis for the sliding scale of wages. This adjuster has very considerable powers of inspecting the accounts of the various plants, and it is stated that his work has usually been very successful. It is of a technical administrative character rather than judicial. Nevertheless, the adjuster seems to be able in many instances to bring about a satisfactory settlement of differences of a somewhat more general character.

"The tin workers' agreement with the American Tin Plate Co. provides for settlement of disputes by negotiations between the 'mill committee' of the men and the employer, with appeal to the district officers of the union and the district manager, and ultimately to the same joint committee which adopts the annual agreements.

"As already pointed out, there are four trades in which systems of arbitration as to specific disputes have been established in a formal manner and on a national scale. These are the stove-molding trade, the general foundry trade, the machinists' trade (now not in existence), and the printing trade. It is noteworthy that in all of these cases the system is established by a permanent written agreement between organizations of employers and employes, and does not rest, as in the trades hitherto discussed, on the annual agreements regarding the conditions of labor, or on mere custom or tacit understanding. These permanent agreements in the first three trades named prohibit altogether strikes and lockouts on the part of members of the organizations and provide for the settlement of all differences by joint committees. In the printing trade, on the other hand, the system of arbitration applies only in the case of such employers as enter into contract with unions to be subject to it.

"It is noteworthy among the four trades just named that only in the case of the printing trade is there provision for referring to an outside person disputes as to which the direct representatives of the organizations of employers and employes can not agree. In the stove foundry, the general foundry, and the machinists trades we find systems of trade arbitration and conciliation in the strict sense. In these trades the agreements declare that the parties to all disputes shall endeavor to come to an amicable understanding among themselves before appealing to a higher tribunal. If they fail to

agree, the dispute is to be referred to representatives of the respective organizations in the several large districts into which the country is divided. In the stove foundry trade the final appeal is to the presidents of the respective national organizations of employers and employes or to delegates designated by them, but if these two can not decide the matter satisfactorily to themselves they may, by mutual agreement, summon a conference committee consisting of three members, previously elected by each organization for an annual term. In the general foundry trade the presidents of the respective organizations, or their representatives, act always, when formal decisions are to be rendered, in conjunction with two other members of each association. Doubtless in practice the presidents attempt to agree between themselves and to influence the disputants to reach a peaceful settlement before calling in associates on the committee. The system which was recently in existence in the machinists' trade was almost precisely similar.

"In all three of the systems juts mentioned the joint committees of arbitration may act by majority vote. In practice doubtless, as in the case of those conferences which adopt agreements as to the general conditions of labor, action is usually taken by unanimous vote. In fact it is probable that the functions of the joint committees of employers and employes consist largely in leading the parties to disputes to a reconciliation and compromise between themselves, although they have power to render binding decisions."

The report reviews the status of collective bargaining and trade arbitration in Great Britain, and a digest of the statutory provisions for arbitration in the several States, with some notes on the practical operation of such laws. Compulsory arbitration is referred to at some length and the results and provisions of the New Zealand law described. The report says that the representatives of employers and workingmen who have testified before the Industrial Commission have almost uniformly opposed compulsory arbitration. Several State boards of arbitration have from time to time expressed themselves against compulsory arbitration as a general principle. The State boards in New York, Indiana, Ohio and Illinois, however, have favored compulsion in certain cases, especially in disputes which, on account of their bitterness and violence, endanger life and the public welfare, at which, like those on great railroad systems or street railways, entail great inconvenience and loss upon the people generally.

One section of the report is given up to interesting matter on laws and court decisions as to labor combinations. Questions growing out of strikes, boycotts, picketing, etc., are treated at considerable length.

Argument has been made for several days of the past week in the United States Supreme Court at Washington in the well-known mixer patent case, which is litigated by the Carnegie Steel Co. and the Cambria Iron Co. The court was not satisfied with the argument made before it last winter and requested a re-argument. Attorneys were surprised to be told that they were to go over the entire ground anew. Ex-Speaker Reed closed for the Carnegie Steel Co. on Monday, Oct. 21. The burden of the argument centered on the answer of the Cambria company that the reservoir process is an old one and that if it is included in the Jones patent the patent is invalid because of the fact that the process antedates the patent by many years, but if the court holds that the patent does include reservoiring the metal the practice of the Cambria company is not an infringement because it is altogether different from that which is followed by the Carnegie company in using the Jones patent.

Messrs. H. Y. Haws, of Johnstown, Pa., E. Reighard, A. E. Patton, William Patton and Samuel Arnold will in the near future erect and operate a fire brick plant at Curwensville, Pa. The company will organize under the name of the H. Y. Haws Fire Brick Co., and will be capitalized at $150,000. The parties interested own and control 236 acres of fine hard fire clay and 200 acres of soft clay near Curwensville. A plant will also be operated near Johnstown, Pa., for the manufacture of fire clay and silica brick. The material for the silica brick will come from Huntingdon county.

AMONG CLEVELAND MACHINE SHOPS.

The Vulcanus Forging Co. has just installed a miller, built by the Cincinnati Milling Machine Co. Recent orders placed with the Vulcanus Co. include 90,000 ⅝-inch galvanized bolts, none under 10 inches long, for the New York Telephone Co.; an order from a local company for dredge forgings sufficient to keep the largest hammer going for the next ten days. A cargo of large nuts has been shipped to Pittsburg and the firm is well supplied with material for speedy delivery of other large orders.

The Cleveland Machine Screw Co. has two machines on the floor ready for shipment to Germany. These machines have been equipped with magazine attachments to handle pressed brass blanks. The company has recently delivered a worm-milling machine to the Winton Motor Carriage Co.

The machine shop of the Winton Motor Carriage Co. is a very busy place at present and the company report orders ahead for delivery next April.

The Veneer Package & Machine Co., incorporated under the laws of Delaware, with $500,000 capital stock, has been authorized to do business in Ohio. The Ohio office will be in Cleveland.

Knox & Elliott are getting up plans for a large addition to the plant of the Cleveland Wire Spring Co. When the new buildings are up the plant of the company will just be doubled in its capacity. Handsome offices will be placed in the new structure.

The Westinghouse Electric & Mfg. Co., as a preliminary to the speedy removal of its plant from Cleveland to Trafford Park, Stewart Station, Pa., has invited bids from dealers in second-hand machinery on the equipment of the present plant in the old Walker Mfg. Co.'s shops at Cleveland. The scattered foundries of this large interest are to be dismantled and foundry operations centralized at the new location, at which additional foundry capacity will also be provided for the Westinghouse Machine Co.

The Cleveland Punch & Shear Works Co. is bringing out an elaborate catalogue of metal working tools in press and desires to send a copy to every manufacturer interested in its line.

A criminal case growing out of the Cleveland molders' strike ended at Buffalo last week in the conviction of Martin F. Murphy, one of the organizers of the Iron Molders' Union. He was charged with conspiracy. It was shown that he had part in a plan, which was successfully carried out, for the intercepting of five men who were on their way to Cleveland to take places in the strike foundries. Murphy represented himself as an agent of the National Foundrymen's Association and piloted the men to a boarding house. Later he secured their arrest as vagrants and they were sentenced to the workhouse. The Buffalo court before whom Murphy was convicted last week fined him $500.

The American Woodworking Machine Co., which has a capital of $4,500,000 and $2,000,000 bonds, has been reorganized. It was incorporated in New Jersey in 1897. The bondholders have surrendered their securities, and the new company has been formed on a smaller capital.

The stockholders of the American Brass Co. of Waterbury, Conn., have voted to offer $575,000 additional stock at par, making the total capital stock $10,000,000. At the meeting last week the purchase of the business of the Holmes, Booth & Haydens Co. was ratified by the directors, together with the absorption of the Chicago Brass Co. and the Coe Co.

The New York Air Brake Co. is considering the erection of a plant in Germany. It is expected that definite action will be taken within the next three months. The plant of the company at Moscow will begin operations on Jan. 1. An official said, last week, that it is one of the early possibilities for the company's stock to be offered for sale in Europe. The railroad companies there are adopting American principles and the demand for supplies is increasing at a great rate.

CINCINNATI MACHINERY MARKET.

Oct. 22.

All the machine tool men report a good business. It is still largely home trade, though there has been some demand from abroad. The foreign business is more in England than elsewhere, and it is significant that the demand for machine tools in England comes in good measure from the building of factories and plants by American capital. A good many of the local tool builders are working night and day and practically all of them have been compelled to advance prices on their product. Looking at business of the country through the spectacles of a machine tool concern, it is hard to see where the predicted slow up is to come in. It is said that every competent machinist in Cincinnati is employed, and it appears that they are all well satisfied with working under the present arrangement, in spite of the fact that the strike of the early part of the year resulted in nothing gained. Some of the concerns are somewhat behind in the shipment of machinery ordered, and there is not much of a let up anywhere that will allow them to get entirely caught up.

Ground has been bought on Clifton avenue and the Baltimore & Ohio Southern Railway for the erection of a new plant of the Wais-King Tool Co. This is the company recently incorporated for the manufacture of boring mills and other kinds of metal working machinery. The company has secured three acres and the plant will be ready for occupancy by about the 1st of March. The company will be in the market for an amount of machinery in the coming months.

A significant order was received on Friday by the Lane & Bodley Co. from Wm. Jessop & Sons, of Sheffield, Eng., who are building the new crucible steel plant at Washington, Pa. The order was for two of the company's Twentieth Century type Corliss engines, one 28-inch bore and 72-inch stroke, and the other 24-inch bore and 60-inch stroke. The engines are for April delivery. This is the engine equipment for this plant that the English concern is building on this side of the water and the order was placed with the Cincinnati concern after a thorough inspection of other plants in this country and a special examination of a similar equipment put in by the same engine building company at the Chicago plant of the Simonds Mfg. Co. The building of the Chicago plant by the Fitchburg, Mass., company is regarded as significant in its way as the building of the plant in America by the English firm. The Lane & Bodley Co. is also building engines on recent orders for the following: High pressure side to complete the low pressure side already in use at the plant of the Bullock Electric Mfg. Co.; throttling engine, 17-inch bore by 27-inch stroke for the new plant of the Louis Lipp Co., Cincinnati; Twentieth Century Corliss, 18-inch bore by 42-inch stroke, for the Block-Pollak Iron Co., Cincinnati; throttling engine for the new plant of the Wais-King Tool Co., Cincinnati.

The new plant of the British Westinghouse Electric & Mfg. Co. has furnished a good deal of business for Cincinnati machine tool concerns. The business has been placed by Lee Hervey, representing Sheldon & Co. of New York and London, and includes 96 lathes to be furnished by the Lodge & Shipley Machine Tool Co., 18, 20 and 24-inch; a number of planers by the G. A. Gray Planer Co., and 60 milling machines by the Cincinnati Milling Machine Co.

A suit that has been in the courts for some four or five years against the Lodge & Shipley Machine Tool Co. was dismissed this week in New York. It was brought by the Hendy Machine Co. of Torrington, Conn., and sought to enjoin the Cincinnati concern from the use of its quick change gear system, claiming that it was an infringement on the patent held by the Eastern company. The dismissal of the suit was on the ground that the claim could not be substantiated.

The Tudor Boiler Mfg. Co. has just shipped the last of seven boilers to the Waukesha Sheet Steel Co., Waukesha, Wis., an independent concern. All of the seven boilers were the same, being of the vertical water tube type, 30 feet high, 8 feet in diameter and of 300 horse-power capacity. The mill will have, when they are all installed, a capacity of 2,100 horse-power in its battery. The Cincinnati manufacturers of these boilers have been making a specialty of this type during the past few years. An order was received last week for one of the same type of 250 horse-power from the Emyln Iron Works of Chicago.

The Cincinnati Milling Machine Co. is making a special effort to push the new all-gear feed mechanism type of milling machines. The feature eliminates shifting of belts and pulleys and permits heavier cuts than with belt driven mechanism. This improvement was a feature of the milling machines recently ordered from this concern by the British Westinghouse Electric & Mfg. Co. for use in the new plant in Manchester, Eng. This was the largest order ever placed for milling machines, including 60 of the various styles.

George P. Altenberg, European salesman for the J. A. Fay & Egan Co., returned to Cincinnati last week after a two years' stay in Europe. He declared that he came back because he wanted to take advantage of what he believed to be the slackest time in the European trade that American machine tool builders might experience in years. He said that the trade in Russia had been killed by the retaliatory duties; that business in Germany was not improving as yet; that France was being called upon for loans of money which will curtail her investments in many ways, and that England is feeling her way on account of the South African war. President Thomas P. Egan of the J. A. Fay & Egan Co. says that the company is making up in its domestic trade any loss that has been experienced in its foreign trade.

There have been frequent and significant rumors that the American Tool Works Co. would move out of the down-town district to land that was bought by the company some years ago just beyond the city limits. Officers of the company say that the removal of the plant will not take place for at least a year and probably longer, but there have been several deals on of late by which outside capital has sought to become interested in the plant, in which case it might be removed sooner than anticipated.

The Hobart Iron Co. of Duluth, Minn., has increased its capital stock from $100,000 to $300,000.

The American Tin Plate Co. is now ready to book orders for the first quarter of next year, at same prices that have ruled for future deliveries this year. This settles the fact that prices will not decline for future delivery for at least another six months, and, in fact, nothing else could be the case, with the stocks of tinplate in manufacturers', dealers' and consumers' hands smaller than at any time in probably 25 years, the very strong iron and steel position, the impossibility of importing tin plates at anything like present future prices and the absence of any outside competition to the United States Steel Corporation in tin plates at present that can affect their position.—[American Metal Market.

It is reliably reported that New Castle, Pa., capitalists are considering the organization of a company and the erection of a plant for the manufacture of nuts, bolts and structural work accessories.

Geo. G. Blackwell of Geo. G. Blackwell, Sons & Co., Ltd., The Albany, Liverpool, Eng., is now in the United States calling upon the trade of his firm. Two lines of the products of this company are of special interest to readers of this paper—alloys specially manufactured for the steel trade, and special furnace linings for steel, copper, lead, cement, electrical and smelting furnaces. The alloys referred to are ferro-chrome, ferro-tungsten, ferro-nickel, ferro molybdenum, chrome-nickel, tungsten-nickel and molybdenum-nickel, and all are manufactured by patented processes. The chief consumption of these alloys is in the manufacture of armor plates, piercing projectiles and other high grade steels. For furnace linings the products of the company are magnesite bricks, bauxite bricks, chrome bricks, calcined magnesite, magnesite cement, bauxite cement and chrome ore. Mr. Blackwell has been in Philadelphia the past week. For the coming week his address is Hotel Rennert, Baltimore.

The Pan-American Exposition-XII.

(Staff Correspondence.)

BUFFALO, Oct. 22.—The David Bell Engineering Works, Buffalo, N. Y., has three of their regular steam hammers on exhibition, as illustrated in the accompanying half tone. These are numbered 1, 2 and 3, and have a falling weight of 250, 450 and 700 pounds in the order named. The falling weight is no very accurate method of conveying an idea of what the hammer is capable of doing in actual work, and with that in mind it is well to add that the No. 1 hammer is designed for light blacksmith work where short, quick heats on small stock are required. The cylinder diameter is six inches and the stroke sixteen inches. The tool is capable of striking a 2,000-pound blow and can be run at 250 strokes per minute. The average diameter of shaft which can be easily beaten out at a single heat is four inches. The Nos. 2 and 3 have cylinders 8 and 10 inches in dimeter, and a stroke of 18 and 22 inches, respectively, will strike blows up to 4,000 and 6,000 pounds at 200 to 150 blows per minute. The average diameters of the shafts which may easily be beaten out at a single heat are 6 and 7 inches.

The valve connections are simple and permit a wide range in the varying stroke, force and rapidity of the blows by the operation of a single lever. There is another point in the direction of simplicity that seemed to me possible to be gained at the expense of a steam-tight packing, and the sight of steam leaking around a rod is a source of annoyance anywhere. I went down to the plant of David Bell Engineering Co. and looked more fully into the matter. The piston rod is planed octagon in section and is guided by an extra deep gland, piston and bushing, thus insuring rigidity when the blow is struck, doing away with the necessity of slides, overcoming the restricted range of shape work of the slide or guide hammer, and leaving the dies in full view of the operator. There is a special packing made for this type of rod and in practice the hammer works tight and clean.

The hammers at the Exposition exhibit are sold: the smaller ones going to a purchaser in San Francisco, who has placed his order for another No. 2; and the No. 3 to a mining company in British Columbia, who are already using one of the same size. The present orders on hand for hammers include a No. 2 for a mining company in Michigan, to whom one of the same size was shipped last week; two of the 850-pound guide hammers, one for Buffalo and the other for New Hampshire parties; a 1,500-pound guide hammer for Los Angeles, Cal.; a No. 2 for use with compressed air in a railroad shop, etc. The slides in these guide hammers are set on strips of leather to give a slight elasticity during the operation of the hammer. Spiral springs are fastened to the under side of the cylinder head to cushion the upward stroke of the hammer in the event of careless handling.

It may be assumed from the exhibit that the firm restricts its operations to the building of hammers. As a matter of fact the present business was founded by David Bell in 1845 and conducted under the name of Bell's Steam Engine Works. Of recent years the steam engine part of the firm name has become too limited to indicate the scope of the enterprise and is scarcely appropriate in the generally accepted meaning of engine manufacturing: the change of name has been accomplished without making any change in the management of the works. The first iron propeller built on the Lakes was constructed by David Bell in 1862 and the concern has since handled considerable marine work.

FIG. 1.—EXHIBIT OF THE FERRACUTE MACHINE CO.

The Ferracute Machine Co., of Bridgeton, N. J., has a collection of twelve presses in Machinery Hall, together with a number of attachments and dies, and a large selection of samples of sheet metal work. In the center of the exhibit is a large rotating turret with samples and photographs of sheet metal machinery, and above the turret are two large revolving signs. The company have supplied a number of coining presses to various countries, and among the samples of press work I noticed specimens of Chinese coinage as well as currency from other nations.

Among the presses is a plain coining press capable of exerting a pressure of 150 tons. This is a substantial, heavily geared machine, and is shown with special dies making small souvenir horse shoes for the Bryden Horse Shoe Co., whose space adjoins the exhibit of the Ferracute Co. This press has a frame cast in one piece and the ram moves upward, when exerting pressure, and is driven by steel toggles. The Ferracute Machine Co., distributes small souvenir pans or plates with an artistic design representing the progress of the coun-

try with a buffalo occupying the center of the pattern. Several of the presses are equipped with dies showing the operations necessary on this class of work.

All the presses have a special form of automatic adjustable clutch, the tripping device being adjustable around the axis of the shaft and so arranged that the shaft cannot make more than one revolution by one action of the treadle. There being two jaws on the wheel the operator never has to wait more than one-half of a revolution for the press to start, and

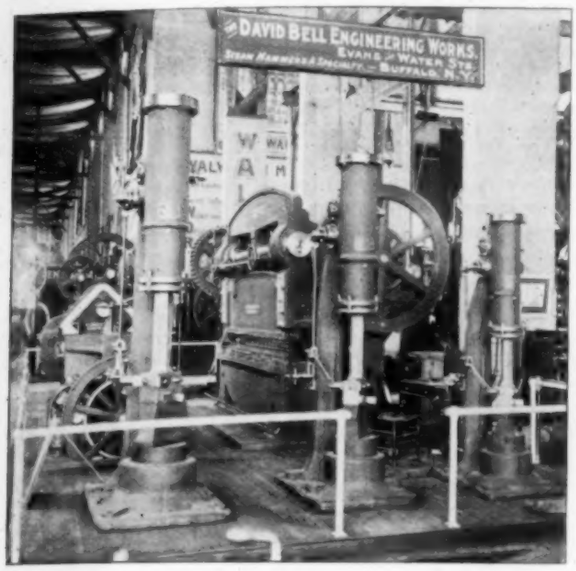

FIG. 2.—EXHIBIT OF DAVID BELL ENGINEERING WORKS.

the time thus saved is in the aggregate of considerable amount. The clutch is provided with a safety-lock attachment allowing the shaft to be revolved to any position and the dies adjusted while the fly-wheel is in motion, thus dispensing with the need of a countershaft. In connection with it is an adjustable spring brake: this is attached to the treadle and has a locking device for continuous running when this is desired.

Empire Steel & Iron Co.

While the erection of a modern furnace at Oxford, N. J., is under consideration by the Empire Steel & Iron Co., no decision has been reached on the matter and the newspaper telegram on the subject is at least premature. The mines of the company at Oxford will be more extensively worked and to that end improvements will be made in equipment and methods. Archer Brown, one of the directors of the company, is quoted as follows on the result of last week's meeting at Oxford: "The board of directors with some of the leading stockholders, made a trip of inspection of some of the company's properties Tuesday last. They visited the ore mines at Mount Hope, near Point Oram, N. J., and the mines and furnace at Oxford, N. J., and later the Crane furnaces at Catasauqua, Pa. The object was to gather the information necessary to decide upon improvements. The mining operations at present are conducted on the old lines. It has been decided by the company to proceed at once to extensive improvement of the ore mines. Facilities will be provided for mining 250,000 to 300,000 tons of ore a year, which will be needed for the company's furnaces in eastern Pennsylvania. The development of the mines is all that has yet been definitely decided upon."

The Zeman Iron Co., of Cleveland, O., has been incorporated with $25,000 capital. Mathew Zeman, A. F. S. Purney, J. H. Nieding, Emil Joseph and E. W. Waite are the incorporators.

The Port Huron Malleable Iron Co., Port Huron, Mich., will shortly be organized with $60,000 capital, for the purpose of operating a malleable iron foundry.

RECIPROCITY CONVENTION AT WASHINGTON.

The committee of 100 manufacturers appointed by officers of the National Association of Manufacturers to arrange for a reciprocity convention met at Philadelphia Oct. 18. President Search of the National Association of Manufacturers addressed the meeting referring to the widespread interest in the proposed convention and emphasizing the necessity of prventing its diversion to purposes other than that originally intended. The outcome of the discussion that followed was the adoption of a call that will be sent to commercial organizations all over the country.

"In pursuance of a suggestion advanced by the National Association of Manufacturers arrangements have been made for the holding of a national reciprocity convention in Washington, Nov. 19. The sole purpose of this conference is to discuss the expediency and practicability of the broader applications of the principles of the commercial reciprocity as a means of expanding foreign markets for American products without sacrificing the interests of any of our industries. The object of this convention is to ascertain accurately the views of representative manufacturers on this subject and to formulate, if possible, some practical suggestions for such legislation or diplomatic negotiation as may be necessary to establish more intimate commercial relations between the United States and other nations. Your organization is invited to participate in this reciprocity conference by the appointment of delegates who must be named in accordance with this foregoing statement of purposes and accompanying rules to govern such appointments.

The rules, which accompany the call, provide that organizations with a membership of 100 or less shall be entitled to appoint five delegates. For each additional 100 members up to 500 one additional delegate may be appointed. Organizations having over 500 members may appoint 10 delegates.

Sweden's Famous Iron Mine.

For centuries the Dannemora iron ore mines in Sweden have been to the iron maker what Mecca is to the Mohammedan. It is there that the purest iron ore commercially known to man exists. The operating company is a close corporation, and the ore is sold to no one outside of it; that is, the owners all possess iron or steel producing plants, and obtain from these mines part of their supplies. They limit the production to 50,000 tons per annum, and place it at a price which might seem prohibitory, but from its quality they can afford to so charge themselves.

The ore, which now comes from entirely underground operation, is magnetite, with an average of 50 per cent of metallic iron, and from 0.0025 to 0.005 per cent phosphorus. It requires very little flux in the blast furnace, as the gangue is principally limestone, and the phosphorus is of that minute quantity which generally leads one to doubt the chemists' reputed results.

The mine has been operated for at least 400 years. At first it was owned by private parties, but later reverted to the government. In 1863 it was again taken by individuals, and has been successfully worked ever since. Up to 1829 the ore was disrupted by fire setting. In that year the use of gunpowder was introduced. As the present working depth is 846 feet, visiting the works seems like penetrating the bowels of the earth, and when we reflect on the great age of the mine and the primitive character of its first exploiting, we could not help feeling that from some dark corner might come the spirit of the ancient Norseman to ask why we were intruding upon its original home.—[Robert W. Hunt, in Cassier's Magazine.

The Eagle Can Mfg. Co. of Huntington, N. Y., has been incorporated with $50,000 capital to manufacture tin cans. A. M. Dickson, A. E. Stacy and J. T. Bergen are the incorporators.

The Utica Heater Co., Utica, N. Y., is circulating a neat pamphlet containing the last speech of President McKinley, as delivered at Buffalo, Sept. 5. The title page bears a portrait.

BLAST FURNACES OF THE HANGING ROCK REGION.

In a sheet recently published by the Wellston Iron & Steel Co., of Wellston, O., a complete list is given of the blast furnaces built in the Hanging Rock region from the beginning to the present time. This famous district both on its Ohio and its Kentucky sides, has produced many eminent iron masters and its history is most interesting. The death recently of John D. Davies, of the Jefferson Furnace Co. has led to the republication of the history of that noteworthy enterprise. One of the provisions of the company's charter was that none but persons of Welsh birth could hold stock in the company. It was the practice of the owners to bank the furnace Saturday night and never to operate it on Sunday. When the construction of the furnace was started in February, 1854, charcoal iron was selling at $50 per ton, but when the furnace was completed, in October, the price had dropped to $35. Jefferson iron became famous the world over for its superior quality, for the manufacture of cannon. The United States government bought thousands of tons of the Jefferson furnace iron and several times tried to get the entire output.

The furnace was started in 1854 and paid no dividends for the first seven years of its existence. Then the following payments were made; 1861, 10 per cent; 1862, 20 per cent; 1863, 30 per cent; 1864, 100 per cent; 1865, 150 per cent; 1866, 200 per cent; 1867, 100 per cent; 1868, 100 per cent; 1869, 100 per cent; 1870, 100 per cent; 1871, 100 per cent; 1872, 100 per cent; 1873, 100 per cent; 1874, no dividend; 1875, no dividend; 1876, no dividend; 1877, no dividend; 1878, no dividend; 1879, 30 per cent; 1880, 200 per cent; 1881, 100 per cent; 1882, 100 per cent; 1883, 70 per cent; 1884, 60 per cent; 1885, 50 per cent; 1886, 30 per cent; 1887, 20 per cent; 1888, 20 per cent; 1889, 25 per cent; 1890-91-92-93-94-95-96 and 1897, no dividends; 1898-99, not operated; 1900, no dividend. In the 44 years the furnace was operated it paid in dividends $957,500, or 1915 per cent on its capital stock, an annual average of slightly over 43½ per cent.

The Wellston Iron & Steel Co.'s list of Hanging Rock furnaces, which we reproduce below, shows that it is operating Wellston stacks 1 and 2, and the Madison and Milton furnaces, all in Jackson county, and producing 85,000 tons a year:

Name of Furnace.	County.	When Built.	By Whom Built.	Original Daily Ton Capacity.	Fuel.	Height Stack.	Bosh.	Top.	Blast.	Owner or Lessee.	Post Office.
Argilite	Greenup	1818	Richard Deering and Trimble Bros.	1	Charcoal	25	6	Open	Cold		Abandoned.
Amanda	Boyd	1829	Lindsey, Poague, et al.	5	"						"
Ashland (1 & 2)	Boyd	1869	Ashland Coal, Iron & Ry. Co.	40	Bituminous Coal	62	15	Closed	Hot	Ashland Coal, Iron & Ry. Co.	Ashland, Ky.
Alice	Lawrence	1875	Etna Iron Works Co.	60	" "	86	18	"	"	Martin Iron and Steel Co.	Ironton, O.
Blanche	Lawrence	1875	Etna Iron Works Co.	60	" "	86	18	"	"	" " " "	"
Belfont	Lawrence	1867	Belfont Iron Works Co.	45	" "	70	16	"	"	Belfont Iron Works Co.	"
Bellefonte	Greenup	1826	A. Paull, Geo. Poague, et al.	14	Charcoal	33	10½	Open	"	Means Russell & Means	Ashland, Ky.
Buena Vista	Boyd	1848	Wm. Foster, et al.	15	"	40	10½	"	"	Means & Co. (abandoned)	"
Buckhorn	Lawrence	1833	James & Findley	15	"	32	10½	"	"	McGugin & Co.	Olive F'rnace, O
Buffalo	Greenup	1851	L. Hollister, Ross & Co.	15	"	40	10½	"	"		Abandoned.
Buckeye	Jackson	1851	C. Newkirk, et al.	12	"	37	11	"	"		"
Bloom	Scioto	1832	John Benner, et al.	15	"	35	9	"	"	Clare Iron Co.	Portsmouth, O.
Boone	Carter	1856	Sebastian Eifort, et al.	12	"	45	9	"	"		Abandoned.
Cambria	Jackson	1854	D. Lewis & Co.	12	"	38	10½	"	"		"
Caroline	Greenup	1833	Henry Blake & Co.	3	"						"
Centre	Lawrence	1836	Wm. Carpenter, et al	16	"	40	10½	Open	Hot	Lindsey Kelly	Ironton, O.
Cincinnati	Vinton	1853	Westall, Stewart, et al.	13	"	40	10½	"	"		Abandoned.
Clinton	Boyd	1830	Poague Brothers	2	"						"
Clinton	Scioto	1832	McCollum, et al.	11	"	31	10	Open	Hot		"
Diamond	Jackson	1856	Moses Sternberger, Al'x. Gratton, et al	10	Bituminous Coal						"
Eagle	Vinton	1852	A. Bentley, et al.	15	Charcoal	36	11	Open	Hot		"
Empire	Scioto	1846	Glidden Bros.	7	"			"	"		"
Enterprise	Greenup	1832	— Clingman	3	"			"	"		"
Etna	Lawrence	1832	James Rodgers, et al.	16	"	37	10½	"	Either		"
Eliza	Jackson	1877	H. S. Bundy	10	Bituminous Coal	52	13	Closed	Hot		"
Fulton	Jackson	1868	Lewis Davis, et al.	12	" "	40	11½	"	"	Globe Iron Co.	Jackson, O.
Franklin	Scioto	1827	Daniel Young, et al.	7	Charcoal			Open	"		Abandoned.
Gallia	Gallia	1847	John Campbell, et al.	15	"	36	10	"	"		"
Globe	Greenup	1833	Geo. Darlington, et al.	3	"			"	"		"
Globe	Jackson	1872	Watts, Hoop & Co.	20	Bituminous Coal	46	12	Closed	"		"
Grant	Lawrence	1869	W. D. Kelly & Sons	16	Charcoal	42	11	Open	"		"
Greenup	Greenup	1844	Campbell, Peters & Culbertson	16	"	47	11½	"	"		"
Howard	Scioto	1853	John Campbell and D. T. Woodrow	15	"	36	10½	"	"		"
Hope	Vinton	1854	Col. Putnam, et al.	14	"	36	10½	"	"		"
Hopewell	Greenup	1832									
Hecla	Lawrence	1833	R. B. Hamilton & McCoy	10	"	36	10½	"	Cold	Hecla Iron & Mining Co.	Ironton, O.
Harrison	Scioto	1853	Eifort, Spellman & Co.	12	"			"	Hot		Abandoned.
Hamden	Vinton	1854	L. C. Damarin, et al.	16	"	34	11		"		"
Huron	Jackson	1874	Huron Iron Co.	12	Bituminous Coal	49	11½	Closed	"		"
Hamilton	Lawrence	1883	Means, Kyle & Co.	40	Coke	65	16	"	"	Hanging Rock Iron Co.	Hang'g Rock, O
Iron Hills	Carter	1873	Iron Hills Furnace & Mining Co.	18	Charcoal	50	11		"		Abandoned.
Iron Valley	Jackson	1853	S. Baird, et al.	12	"	37	10½	Open	Either		"
Ironton	Lawrence	1875	Iron and Steel Co.	40	Bituminous Coal	58	15½	Closed	Hot	Union Iron and Steel Co.	Ironton, O.
Jackson	Jackson	1838	Hurd, Young, et al.	12	Charcoal	36	10½	Open	"		Abandoned.
Jefferson	Jackson	1854	Jefferson Furnace Co.	14	"	40	11	"	Either	Jefferson Iron Co.	Oak Hill, O.
Junior	Scioto	1832	Young Bros., et al	8	"			"	Hot		Abandoned.
Keystone	Jackson	1849	John Campbell, S. McConnell, et al.	15	"	36	10½	"	"		"
Kenton	Greenup	1856	John Warring, et al.	13	"	36	11	"	"		"
Latrobe	Jackson	1854	W. McGhee, H. F. Austin, et al.	12	"	35	10	"	"		"
Laurel	Greenup	1848	Wurts Brothers	12	"	38	9½	"	Either		"
Lagrange	Lawrence	1836	Hurd, Gould & Co.		"			"	Hot		"
Lawrence	Lawrence	1834	J. Riggs & Co.	15	"	40	11	"	"	Lawrence Iron Co.	Ironton, O.
Limestone	Jackson	1855	Evans, Walterhouse, et al.	10	"			"	"		Abandoned.
Logan	Hocking	1853	Dumm Bros.	15	"	29	10		"		"
Madison	Jackson	1854	John Campbell, J. P. Terry, et al.	14	"	41	9	Closed	Either	Wellston Iron and Steel Co.	Wellston, O.
Milton	Jackson	1873	Milton Furnace and Coal Co.	15	Bituminous Coal	50	12	"	Hot	Wellston Iron and Steel Co.	
Monitor	Lawrence	1868	John Peters	13	Charcoal	40	11	Open	"		Abandoned.
Mt. Vernon	Lawrence	1833	Hamilton, Campbell & Ellison	16	"	32	10½	"	"		"
Mt. Savage	Carter	1848	R. M. Biggs, et al.	14	"	38	11	"	"		"
Monroe	Jackson	1856	John Campbell, W. M. Bolles, et al.	20	"	37	12	"	"		"
New Hampshire	Greenup	1848	Seaton & Boyd Bros.		"			"	"		"
Norton	Boyd	1873	Norton Iron Works	45	Bituminous Coal	67	18	Closed	"	Norton Iron Works Co.	Ashland, Ky.
Oakland	Boyd	1834	Kouns Bros.		Charcoal			Open	"		Abandoned.
Orange	Jackson	1864	Watson, et al.	10	Bituminous Coal	40	10	Closed	"		"
Ophir	Jackson	1874	H. S. Bundy, et al.	10	" "	40	10	Open	"		"
Olive	Lawrence	1846	John Campbell and John Peters.	15	Charcoal	37	9½	"	"	McGugin & Co.	Olive F'rnace, O
Oak Ridge	Lawrence	1856	W. W. Mather and Gen. O. M. Mitchell		"	40	10½	"	"		Abandoned.
Ohio	Scioto	1845	David Sinton and T. W. Means.	15	"	32	10	"	"		"
Pine Grove	Lawrence	1828	Robert Hamilton and A. Ellison.	16	"	36	11	"	"	Hanging Rock Iron Co.	Inactive.
Pennsylvania	Greenup	1848	Wurts Bros.	12	"	37	10½	"	"		Abandoned.
Pactolus	Greenup	1824	McMurty & Ward.	2	"			"	Cold		"
Pioneer	Scioto	1856	W. Colvin, U. Tracy, et al.	12	"			"	Hot		"
Princess	Boyd	1877	Thos. W. Means.	18	Bituminous Coal	50	12	Closed	"		"
Raccoon	Greenup	1833	D. Trimble, J. T. Woodrow, et al.	12	Charcoal	36	10½	Open	Either		
Sarah	Lawrence	1877	H. Campbell & Son	30	Coke	50	14	Closed	Hot	Kelly Nail and Iron Co.	Ironton, O.
Star	Jackson	1866	Isaac Brown, et al.	15	Bituminous Coal	40	11	"	"	Star Furnace Co.	Jackson, O.
Star	Boyd	1847	A. McCullough and Lampton Bros.		Charcoal						Abandoned.
Sandy	Greenup	1847	D. Young, Gilruth, et al.		"			Open	Hot		"
Steam	Greenup	1824	Shreeves Bros.	1	"			"	"		"
Scioto	Scioto	1828	William Salters	12	"	32	10½	"	"		"
Tropic	Jackson	1873	Tropic Furnace Co.	12	Bituminous Coal	47	11½	Closed			"
Union	Lawrence	1826	James Rodgers & Co.		Charcoal			Open	Cold		"
Union	Hocking	1854		14	"	32	10	"	Hot		"
Vesuvius	Lawrence	1833	Hurd, Gould, et al.	10	"	28	10⅛	"	Cold	Vesuvius Iron Co.	Ironton, O.
Vinton	Vinton	1853	John E. Clark, Culbertson, et al.	12	"	40	10	"	Hot		Abandoned.
Washington	Lawrence	1853	John Campbell, John Peters, et al.	17	"	35	11	"	"		"
Wellston (1 & 2)	Jackson	1875	Wellston Coal and Iron Co.	15	Bituminous Coal	53	11½	Closed	Warm	Wellston Iron and Steel Co.	Wellston, O.
Young America	Jackson	1857	Powell, Cavett, Draper, Laird, et al.	12	" "			"	Hot		Abandoned.
Zaleski	Vinton	1858	Waters et al.	10							

INJUNCTION AGAINST CHICAGO PICKETS.

Judge Christian C. Kohlsaat, of the United States Circuit Court, Chicago, granted the Allis-Chalmers Co., Chicago, an injunction last Friday, restraining the several local lodges of the International Association of Machinists and the Iron Molders' Union of North America, their officers and members, as well as the individuals named specifically as defendants "from conspiring to injure the Allis-Chalmers Co.'s business and property, and from in any manner compelling or inducing, by the use of threats, intimidation of any sort, fraud, deception, or violence, any person to leave complainant's employ, if not desirous of so doing; and from doing any act or thing whatsoever, by any means or methods, in furtherance of a purpose to impede, interrupt, obstruct or interfere with the business of complainants; or to impede any of its officers or employes in the free and unhindered conduct and control of complainant's business; also, from picketing, guarding, obstructing, impeding, besetting or patrolling the streets, alleys or approaches to the premises of complainant, or ordering the same to be done, for the purpose, and in such manner as to intimidate, threaten, impede, obstruct or coerce any of the employes of complainant or persons seeking employment of the complainant."

The preliminary restraining order was issued by Judge Kohlsaat against the pickets at the Allis-Chalmers plants in August, and a month ago the case was argued for two days. The above permanent order is the result. It is broad in its scope and covers many of the questions involved in the disputes between capital and labor. After going over the history of the case and the charges and affidavits made by both sides, the court in his decision, says:

"While it will be seen that defendants deny all violence and intimidation, yet it is beyond question that such a condition exists about said plants, that men seeking to work there stand in fear of bodily violence, to such a degree that complainant for such reason is unable to secure a sufficient number to carry on its said business, and is compelled to keep what men it does employ within its premises, as in a fortress. They are there subject to so many privations that the only reasonable explanation for their enduring them is their evident desire to work, and their fear of bodily violence in case they leave the plants.

"It further appears that the so-called picketing is systematically carried on, and that all persons supposed to be aiding complainant in the work formerly performed by defendants are approached and remonstrated with. Certainly, if only peaceful persuasion is used, and there are no underlying or implied threats in the demeanor or language used by the strikers, either a large body of men are unusually and strangely timid, or defendants and their confederates have been very unfortunate in their manner of disclosing their peaceful and harmless intentions.

"It is conceivable, theoretically, that patrols or pickets could be maintained upon the platonic basis claimed by defendants, but the evidence, taken as a whole, leaves no doubt in the mind of the court that the name was not misapplied in this case. Here a siege exists.

"These being the facts in this case, the law is clear and emphatic. The jurisdiction of a court of equity to restrain the defendants, under the circumstances, is too well established to require citations or be called in question by anyone familiar with the decisions. The jurisdiction being established, is there any doubt as to whether the court should in this case grant the temporary injunction prayed for? I am clear there is not. As now presented, the court must grant the writ in broad and unmistakable terms, commensurate with the exigencies of the situation, as shown by the facts in evidence upon this proceeding."

Speaking of the right of workmen to continue at or quit work, as they choose, the court says:

"It is the undoubted right of workmen to quit work, severally or in a body, so long as the act does not come within the rule against conspiracies to injure the property of another. They may also use peaceful means in persuading others to join them in carrying out the strike subject to the above rules. Both of these rights, however, must be exercised in such a manner as not to otherwise interfere with the right of every man to run his own business in his own way, provided he keeps within the law in so doing, or the right of every man to work or not to work, to strike or not to strike, to join a union or not, as he thinks best. In other words, a man may decide his own course, and hold himself to any course, but he can not impose those rules or that course upon the conduct of any other man against his wish, any more than he can place fetters upon his hands or shackles upon his feet. And when, as in the case at bar, the attempt is made, through intimidation and acts of violence, to effect this end, it is tyranny of the most despotic character—it is civil war—it is treason to the principles of this and almost every other government, and it will not be tolerated. In many of the states this is prohibited by statute. This is a part of the criminal code. To the same effect is a long line of decisions, independent of the statute.

"If, however, the acts referred to are likely to cause irreparable damage to property, courts of chancery have from time immemorial taken jurisdiction for the purpose of protecting parties from such loss. In these days, when capital is tending towards combination, the application of the law is by many assumed to be the creation and enforcement of a new rule. It is as old as the common law, which itself succeeded the law of force. In this country the courts constitute an arm of the government. It is their province to portect the personal and property interests of every man, woman and child, by the enforcement of the laws. This, subject to such imperfections as are human, they have always done, and will do in the future. And herein is the safety of every citizen. Justice is said to be blind. Certain it is that she can discover no difference between the murderous assault, inflicted under cover of a strike and that of the midnight assassin. Both are equally infamous, both equally criminal.

"In considering the situation, it is assuring to know that the great body of workingmen are law-abiding. They, of all men, appreciate the necessity of the enforcement of law. They have not so misread history as to think that capital was ever vanquished by labor in a struggle in which the weapons were force. They are fully alive to the public interests. The future holds the adjustment of the vexing disputes between labor and capital. These disputes are far from being one-sided. Their solution calls for all the wisdom and patience of which human nature is capable. But it will come, as right always will, even though force and injustice may clog its feet. The basis of its advancement must be that the rights of all are respected by each, and the rights of each respected by all."

Machinists Will Continue Picketing.

(Special Telegram.)

CHICAGO, Oct. 23.—Officers of the International Association of Machinists in Chicago say that they will fight Judge Kohlsaat's injunction to the bitter end, and a general meeting of machinists will be held today to discuss the situation. The executive committee also meet today and choose an attorney to act jointly with Attorney Leon Hornstein, who has handled the injunction proceedings for the defendants since application was first made by the Allis-Chalmers Co., for a restraining order. The union is also having printed 10,000 cards for distribution among machinists all over the country. The picketing of the Allis-Chalmers plants will be continued, say the officials of the union, but by means of silent pickets. These men will be supplied with cards, and as a workman passes in or out of the plant, he will be handed one of these cards. Should any questions be asked the conversation will be followed up. Should the card be thrown away nothing will be done. In this manner the striking machinists hope to get around the injunction and continue the struggle.

The Humbert plant of the American Tin Plate Co., located at Connellsville, Pa., will be placed in operation this week. The furnace capacity of the plant is for eight mills instead of six and it is probable that two additional mills will be installed in the near future.

PERSONAL.

The partnership of Banning, Cooper & Co. iron and steel brokers, Lewis Building, Pittsburg, Pa., expired by limitation on Oct. 15. Charles S. Guthrie retired, and Richard Hoffman, Jr., and J. K. Frye were admitted as partners. No change was made in the firm name.

George F. Baer, identified with the Philadelphia & Reading railroad and T. N. Ely and F. C. Finck of the Pennsylvania railroad have been elected directors of the Pennsylvania Steel Co. They will represent the Pennsylvania railroad interests.

J. H. Lefevre, formerly connected with the Illinois Steel Co. at Chicago, Ill., has been appointed superintendent of the open-hearth department of the Dominion Iron & Steel Co. of Sydney, Nova Scotia.

T. C. King, superintendent of the blast furnace plant of the Sharon Steel Co., Sharon, Pa., has resigned. He will be succeeded by Guy R. Johnson, formerly superintendent of the Duquesne furnaces of the Carnegie Steel Co.

James Laughlin, Jr., of Pittsburg, has been elected one of the trustees of Princeton University.

M. Abe, naval architect of the Kawasaki Dock Yard Co., of Kobe, Japan, was in Pittsburg this week, placing orders for ship plates.

At the regular monthly meeting of the directors of the Cambria Steel Co., held at Philadelphia, John L. Welsh resigned as director and chairman of the executive committee, and E. B. Morris was elected his successor. F. J. Firth and T. N. Ely, who with Mr. Morris represent the Pennsylvania railroad interests in the company, were elected members of the executive committee. No action was taken with reference to the removal of the company offices to Johnstown, Pa.

C. B. Lewis, formerly manager of the Chester Steel Casting Co., has been elected president of the Old Dominion Iron Nail Works of Richmond, Va.

F. M. Kernan has been appointed general superintendent of the new steel plant at Monterey, Mexico.

D. B. Chambers, of H. H. Brown & Co., Cleveland, has returned from Europe.

Wm. Lodge, of the Lodge & Shipley Machine Tool Co., Cincinnati, will spend the next two months in Europe.

Andrew Carnegie will sail from Southampton for the United States on the St. Louis, Saturday, Oct. 26.

Morris W. Head has been appointed superintendent of the Coalbrook Works of the H. C. Frick Co., vice William Pollins, who has been transferred to the Marguerite plant.

David Evans, formerly salesman in the Chicago office of Fieser, Wagoner & Bentley, Columbus, O., has succeeded the late John J. Wagoner in the Chicago agency of the Sloss Sheffield Steel & Iron Co., Birmingham, Ala., manufacturers of the "Sloss," "Florence," "Sheffield," and "Lady Ensley" brands of pig iron. Mr. Evans will also represent Fieser, Wagoner & Bentley in the Chicago territory in the sale of "Bessie Silvery" iron.

J. Thompson, of J. Thompson & Co., iron founders, Philadelphia, and treasurer of the Foundrymen's Association, Philadelphia, has just returned from a Pacific coast trip for his health.

Obituary.

William P. Hopkins, general manager of the Slatington Rolling Mill, Catasauqua, Pa., died at his home at the latter place on Thursday, Oct. 17, at the age of 69. He was one of the best known iron masters in Pennsylvania and upwards of 50 years of his life were spent in rolling mills. He claimed the distinction of having rolled the first black plate for tinning purposes from puddled iron, at the age of 20, at Workington, Wales. In 1860 he came to this country and for several years was employed in the mills of the Alan Wood Co., Conshohocken, Pa. He was later made superintendent of the Catasauqua and Fullerton Rolling Mills and served in that capacity for 25 years. In 1890 he was one of the organizers of the Slatington Rolling Mill. He was elected its manager and served in that capacity until his death.

Arthur R. Heintz, one of the proprietors of the Pacific Iron Works, Portland, Ore., died at his home on Oct. 10, aged 43 years. He was one of the organizers of this company, which is one of the best known on the entire Pacific Coast.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of their Wants:—

The McArthur Machine Co. of Des Moines, Ia., has been incorporated with $15,000 capital. R. C. McArthur, E. C. Musgrave and F. S. Dunshee are the incorporators.

The Empire Brass Mfg. Co. of Cleveland, O., has been incorporated with $20,000 capital for the purpose of conducting a brass foundry. F. Nohius, V. M. Wellman, G. W. Nahius, S. O. G. Morris and E. C. Kelley are the incorporators.

The Stilson Engine Co. of Prophetstown, Ill., has been incorporated with $50,000 capital to promote the manufacture of a rotary engine invented by H. A. Stilson. A. S. Brewer has been elected president of the new company; L. W. Dennison, secretary, and A. F. Glassburn, treasurer.

The stockholders of the Old Dominion Iron & Nail Works, Richmond, Va., at a meeting last week reorganized by electing G. N. Lewis, formerly general superintendent of the Chester Steel Casting Co., president. R. B. Blankenship was elected secretary and treasurer. The board of directors consists of Messrs. J. William Middendorf, F. C. Todd, E. L. Beniss, R. L. Williams, R. B. Blankenship, F. E. Notting and L. M. Williams. The plant will be enlarged and improved.

The Erickson Machine Co. of Rugby, N. D., has been incorporated with a nominal capital to conduct a general machine shop. Henry Erickson, Marius Erickson and F. L. Ely are the incorporators.

The Eclipse Gas Stove Co. of Rockford, Ill., has purchased the foundry plant of the American Foundry Co. of the same place. Hereafter the foundry will be confined to castings for gas stoves while the directors in the American Foundry will shortly organize a new company for the purpose of erecting a foundry to do a general foundry business.

The El Paso Foundry & Machine Co. of El Paso, Texas, has been incorporated with $100,000 capital to conduct a general foundry and machine shop.

The National Can Co. of Detroit, Mich., has been incorporated with $100,000 capital for the purpose of manufacturing and selling tin cans and other sheet metal articles. T. D. Buhl, W. W. Warren, D. M. Ireland, F. W. Eddy, F. T. Ducharme, F. E. Wadsworth and E. H. Nelson are the incorporators.

The Phoenix Foundry Co. of Detroit, Mich., has been incorporated with $25,000 capital. M. Wendland, J. F. Shaening, G. Reimold and W. H. Flynn are the incorporators.

Ground has been broken for the new plant of the Ohio Steel & Iron Specialty Co., at Cuyahoga Falls, O. The company will manufacture staybolts, angle, tee and channel iron, light structural material, etc. E. A. Henry is president; Geo. W. Reid, vice-president; L. H. Whitcomb, secretary, and H B. Hamlin, treasurer.

The Sterling Iron Works, Springfield, Mo., has been incorporated with a capital of $50,000 and will conduct a general foundry and machine business. The plant of the Springfield Stove Works has been acquired and a blacksmith and boiler shop will be added. H. C. Mosher, president; H. T. Hornsby, vice-president and treasurer; R. P. Bowyer, secretary; with O. L. Milligan, H. F. Fellows, Arch McGregor and William B. Sanford as directors.

The Hurlock Drop Forge Co., Hurlock, Md., has been organized by Joseph B. Andrews, James L. Christopher, William M. Wright, Thomas I. Wright and others.

The Duluth Gas Engine Works, Duluth, Minn., has been incorporated with a capital stock of $50,000. The incorporators are: Adolph A. Williams and Axel E. Zimmerman of Duluth, and G. W. Johnson, West Superior, Wis.

B. L. Berkey Machinery Co., El Paso, Tex., has been incorporated with capital stock of $20,000, by B. L. Berkey, C. M. Berkey and David D. Miller.

The malleable casting plant at North St. Paul, Minn., formerly handled by the Minnesota Malleable Iron Co., has been acquired by the American Grass Twine Co. on the termination of the lease previously held by the former company.

W. F. Lees of Cannelton, Ind., and A. J. Daniels of Owens-

boro, Ky., have incorporated the Lees Machine Works Co., with capital stock of $25,000.

The Vulcan Foundry Co., Hamilton, O., has been merged into a stock company.

W. S. Fletcher has been elected president, and J. H. Holcombe, secretary and treasurer, of the $25,000 company reported recently to be organized for the establishment of pipe works at Gadsden, Ala.

Fires and Accidents:—

The machine shop and brass foundry operated by Halstead & Co., Philadelphia, Pa., was destroyed by fire last week, entailing a loss of $6,000.

The machine shop and foundry of Pattin Bros. & Co., located at Marietta, O., were completely gutted by fire this week, entailing a loss of $30,000. The fire was the result of a gas explosion in which D. B. Pattin, one of the proprietors, lost his life.

Open-hearth furnaces, Nos. 14 and 16, of the Homestead Steel Works of the Carnegie Steel Co., Carnegie, Pa., collapsed last week and the molten metal was scattered all over the plant. None of the workmen were injured, however.

The machine shop of Biggs & Dillon, Benton, Ill., was destroyed by fire last week, entailing a loss of $2,000.

The Burger Mfg. Co. plant of the American Can Co., located at Jersey City, N. J., was destroyed by fire Oct. 18. Loss, $75,000.

The repair shops of the Lehigh & New England Railroad Co. at Pen Argyl, Pa., were destroyed last week by fire. Three locomotives and a lot of valuable machinery were ruined. Loss, $25,000.

New Construction:—

The new machine shop to be erected at Topeka, Kas., by the Santa Fe Railroad, will be 850 feet long and 153 feet wide. Work on the foundation has already been commenced.

The Eaton, Cole & Burnham Co. of Bridgeport, Conn., will erect a foundry, 400x100 feet. The Berlin Construction Co. has been awarded the contract for the erection of the building.

The Niles Iron & Sheet Co., Niles, O., is about to let a contract for a large warehouse. It has also made inquiry for a 50-ft. addition to its mill buildings. This will make the latter 275x134 feet. The company is having good success in the operation of its mill.

The hammer department of the Wood plant of the American Sheet Steel Co., McKeesport, Pa., will be removed to the Wellsville plant, located at Wellsville, O. At the latter plant four new sheet mills will shortly be installed, making the plant a ten mill affair instead of six.

The Empire Steel & Iron Co. of Washington, N. J., will erect a new blast furnace at Oxford, N. J., for the purpose of smelting local ores. The new furnace will be about equal in size to the Port Oram furnace, which was recently blown in.

The Northwestern Malleable Iron Co., Milwaukee, has bought a tract of ground, 245x625 feet and will erect a new foundry, 70x450 feet. Two furnaces are to be purchased, giving the company a capacity of 100 tons of malleable castings daily.

The Colvin Foundry Co., Providence, R. I., will extend the foundry by a brick and steel addition, 100x50 feet, as well as an office building and pattern shop three stories high, 125x60 feet.

The American Bridge Co. has begun the erection of pipe and skelp mills at the Sharon Steel Co.'s works at South Sharon, Pa. Work will be commenced on the 20-mill sheet steel plant in a few days. The pipe mill will have a capacity of 300 tons daily; skelp mill, 400 tons, and sheet mills, 200 tons. The three mills represent an outlay of over $1,200,000.

Ground has been broken for the erection of the 116-inch plate mill of the Lukens Iron & Steel Co., Coatesville, Pa. This will increase the present capacity to 400,000 tons of sheared and universal plates per year.

The Bentel & Margedant Co., Hamilton, O., will erect a foundry, 112x48 feet.

Contracts have been placed for additions to the plant of the Racine Steel & Iron Mfg. Co., Racine, Wis. The foundry will be enlarged by a 70x150-ft. addition and there will be an extension to the machine shop of 60x130 feet: both buildings will be brick with stone foundations.

The Girard Foundry & Machine Co., Girard, O., will put its new plant in operation at once for the manufacture of gray iron castings and a line of general machine work. The officers are E. Hartzell, president; E. L. Hauser, vice-president; Frank Deemer, secretary and general manager, and Wade R. Deemer, treasurer.

The new foundry and machine shop recently completed by F. H. Pike, East Randolph, N. Y. The foundry is 26x48 feet; machine shop, 16x28 feet, and stock room, 12x32 feet.

The Highlands Iron & Steel Co., Terre Haute, Ind., expects to have the bar iron and steel plant in operation early in November. The plant will be under the control of John Smith and William Myers, formerly with the Indiana plant at Muncie.

The L. S. Starrett Co., Athol, Mass., has let contracts for erecting its new machine shops to G. H. Cutting & Co., of Worcester, Mass., the buildings to be completed by April. There will be a combined office and graduating building, 49x160 ft.; a machine shop, 50x162 ft.; power house, coal pockets and a chimney 100 ft. high. Fred S. Hines, Essex Bldg., Boston, is architect and engineer.

The Dillon-Griswold Wire Co. will soon begin work on extensive additions to its plant at Sterling, Ill.

A 50x60 foot building is to be erected by the F. Baugh Foundry Co. at Alliance, O., after designs by W. B. Hunt.

The Racine Malleable & Wrought Iron Co. will build a foundry, 500x75 feet at Lakeside, Wis. B. Hinrichs is secretary of the company.

Parkersburg (W. Va.) Steel Co. reported recently as to operate on a larger scale than was at first intended, has increased its capital stock from $250,000 to $500,000.

The American Metal Wheel & Toy Co. is contemplating the construction of a new plant at Toledo, O.

The Texas Southern Railway has made a proposition to erect its offices and shops at Marshall, Texas, provided a certain bonus is granted.

The Baltimore & Ohio Railroad Co. will make extensive improvements to its Mt. Clare shops at Baltimore, Md., involving an expenditure of about $65,000 for buildings and as much more for machinery. The addition to machine shops will be 60x240 feet, of brick and iron, two stories high; erecting shop will be enlarged 70x240 feet, of iron, with slate roof; machine shop addition will cost $22,000, and the other addition $40,000.

The Pittsburg District:—

The Pittsburg Coal Co. will put in operation in November at Montour Junction, Pa., large car and erecting shops, which will make the company practically independent so far as the construction of mine and railroad cars is concerned. The plant covers about five acres and is equipped for the production of 30 railroad cars and 500 mine cars every month. Included in the plant are a forging plant, machine shops, pit car and railway car erecting shops.

On Friday, Oct. 18, the night turn at Braddock, Pa., plant of the American Steel & Wire Co., broke all previous records in wire making by producing 394,860 pounds of wire. The best previous record was 391,380 pounds.

This week the Lewis Foundry & Machine Co., located on the South Side, Pittsburg, commenced the removal of its machinery to the new plant, located near Coraopolis, Pa. The new plant will be placed in operation in several months.

The Columbia Bridge Co. of Pittsburg, with plant at Carnegie, Pa., will probably locate at Wheeling, W. Va., in the near future. A site at the latter place is already under consideration. The support of the citizens of Wheeling has been promised and the capital stock of the company will be increased to $1,000,000.

The Everson Steel Co., of Pittsburg, recently incorporated under the laws of West Virginia, has issued a prospectus descriptive of the plant it proposes to build. The company is capitalized at $3,000,000 and tubes, bars and billets will be the main products. In addition one department will be devoted to the production of steel wheels, the annual capacity to be 8,000 sets. A site will be secured along the Ohio river, near Pittsburg. The plant is to be in operation within 10 months.

The St. Clair Steel Co., one of the allied interests of the Crucible Steel Co. of America, will erect 130 houses at Clairton, Pa., where the blast furnace plant of the company will be erected.

As exclusively stated in these columns three weeks ago the armor plate plant of the Carnegie Steel Co. at Homestead, Pa., is to be increased in size and the output nearly doubled. Engineers of the company are now preparing plans for a plant that will practically duplicate the present plant and within a few months contracts will be awarded for all the machinery and equipment required. The plant will contain a 12,000-ton hydraulic forging press, the order for which has already been placed.

The American Nut & Bolt Fastener Co. of Pittsburg has applied for a Pennsylvania charter with $50,000 capital. Milton Bartley, H. Bartley, S. E. Moore, G. R. Pearson and R. M. Hamilton are the incorporators. A plant will be erected in the Pittsburg district.

The Fort Pitt Malleable & Gray Iron Co. of Pittsburg has been incorporated with $100,000 capital for the purpose of conducting a foundry for the manufacture of fittings for the plumbing and steam fitting trade. J. C. Reilly, E. S. Reilly, F. J. Lanahan, John Murphy and J. A. Weldon are the incorporators. A plant will be erected on Penn Ave., Pittsburg.

In the case of the Puritan Coke Co. against James M. Clark and others, trading as Naylor Bros. of Pittsburg, Pa., the jury returned a verdict for the defendant. The plaintiff demanded $20,000 damages for an alleged breach of contract. On Sept. 17, 1897, the litigants entered into a contract whereby the plaintiffs were to ship to the defendants 45,000 tons of coke. It is averred that the contract was broken by the defendant firm, the reason given being that the coke was of an inferior quality.

The West and Northwest:—

The statement recently published in several newspapers that Joseph T. Ryerson & Co., Chicago, will erect a plant at Toledo, O., making a specialty of marine boilers, is erroneous. The firm advises us that it has no such intention.

The George H. Smith Steel Casting Co. of Milwaukee, Wis., recently incorporated as successor to the Milwaukee Steel Casting Co., 500 to 516 Clinton street, Milwaukee, has built a 100-ft. addition to the foundry, almost doubling the capacity. In a recent issue the address of the company was mistakenly given as Madison, Wis.

General Industrial Notes:—

The official force of the Park Steel Co. of Syracuse, N. Y., has been consolidated with that of the Sanderson Steel Works under the management of Grant D. Green. Both plants are owned and operated by the Crucible Steel Co. of America.

No. 4 furnace of the Tennessee Coal, Iron & Railroad Co. at Ensley, Ala., has been blown in. All five furnaces of this plant are now in operation and for the first time since they were built are they all in operation at the same time. Heretofore one of the five furnaces has always been off for repairs, but owing to the big demand for iron all the furnaces must be operated at present.

Owing to unlooked for delays in securing machinery for the plant of the Waukesha Sheet Steel Co., Waukesha, Wis., the plant was not placed in operation on the first of October, as anticipated. Indications now point to the commencement of operations about the 1st of November, as the installation of machinery during the past two weeks has been progressing unusually fast.

Work on the new blast furnace and ore docks of the Minerva Iron Co., Milwaukee, Wis., is progressing rapidly. Work on the shell of the stack has already been commenced and fully 30 feet of the steel construction is completed. The stack will be 75 feet high and will have a daily capacity of about 400 tons.

The merchant mill of the Joliet, Ill., plant of the Illinois Steel Co., resumed operations this week. The entire plant is now operating in full.

The plant of the Minneapolis Radiator Co., Minneapolis, Minn., has been purchased by the Gregg-Saeger and W. C. Gregg companies of that place. Part of the plant will be used for manufacturing hardware specialties, while the remainder of the plant will be given over to the manufacture of plantation specialties.

The Sharon Tin Plate Co., Sharon, Pa., placed four additional tin mills in operation last week. The remaining six will be placed in operation in about two weeks. When these last mills are in operation the entire plant will be running for the first time since its erection. It contains 20 mills.

Ground was broken at South Sharon, Pa., last week for the new sheet mill to be built by the Sharon Sheet Steel Co.

The Ingersoll-Sargent Drill Co. of New York, N. Y., has written to McKeesport, Pa., parties for a suitable location for its plant. A site has been offered but as yet not accepted.

One turn, working on the 8-inch guide mill at the lower Union plant of the American Steel Hoop Co., at Youngstown, O., last week finished 150,000 pounds of 3-8 rounds. This record has never before been equalled on this size mill.

The Northern Engineering Works of Detroit, Mich., has received an order for a 72-inch cupola for the Wm. Tod Co.'s foundry at Youngstown, O.

The contract for the plate work in connection with the blast furnaces of the Colorado Fuel & Iron Co. at Pueblo, Col., is being vigorously handled by the contractors, John Mohr & Sons, Chicago. One of the three furnaces is already in blast, another is very near completion, and work on the third is well advanced.

The Republic Iron & Steel Co., Youngstown, O., is producing in the neighborhood of 500 tons of steel every 24 hours at the Bessemer works. This production will be doubled on the completion of the improvements now under way.

Lake Superior Iron Mines.

The Oliver Iron Mining Co. has taken up considerable land on the Mesabi range for exploratory work in the coming winter. The old Diamond mine in Itasca county on the extreme western edge of the range, was acquired two years ago, and now the company has bought 40 acres two miles southeast. The result of operations on the far western end of the range have not been entirely satisfactory thus far and some of the options taken have been given up. There appears to be enough of promise, however, in the United States Steel Corporation's operations there to justify going farther.

The suit brought on behalf of the Breitung interests to enjoin the continuance of exploration work by the Cleveland Cliffs Iron Co. on the Breitung lands in Marquette county, Mich., was decided last week in favor of the complainants. The work was carried on under the terms of a 99-year lease to the Pioneer Iron Co. granting free ore for smelting in the latter's furnace. The Cleveland Cliffs Iron Co. claimed its right under an assignment to it of the old Pioneer Iron Co. lease. The court held that the lease was made personal to the Pioneer Iron Co. and its successors in corporate succession, and that when the 30-years' term for which the Pioneer Iron Co. was organized expired it had no corporate successor and all right under the lease would be terminated; that when once terminated nothing but a new grant could revive it.

The stockpile at the Hiawatha mine, Menominee range, has been sold and the mine will reopen for active working through the winter.

In section 58-20 on the Mesabi range the Shenango Iron Co. will soon start its mine, lease of which was bought some time ago at $500,000. It is expected that 100,000 tons will be shipped next year.

After extensive diamond drill operations on the properties it purchased at Negaunee, Mich., six months ago, the Cleveland Cliffs Iron Co. has decided to sink a working shaft. Large bodies of good ore have been located.

The Columbia mine of Jones & Laughlins, Ltd., on the Mesabi range has been closed down indefinitely. The Lincoln and Grant mines of the same interests will be worked extensively.

A record of 80,865 gross tons of ore hoisted through a single two compartment shaft has been made in 26 days at the Auburn mines. The property will ship about 500,000 tons this year.

It has been announced that on behalf of the Breitung estate the exploration of mineral lands at Negaunee involved in the litigation over the Pioneer Iron Co. lease, will be begun soon and pushed vigorously. It is believed that much of value is to be found on these lands.

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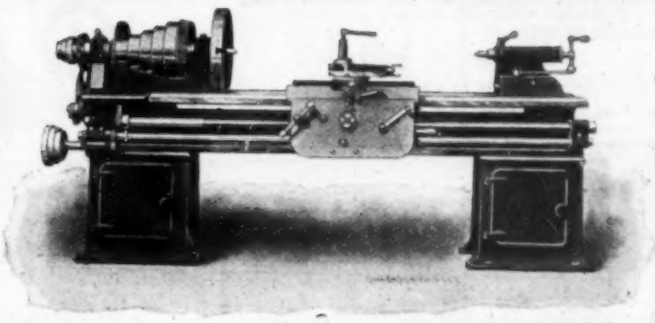

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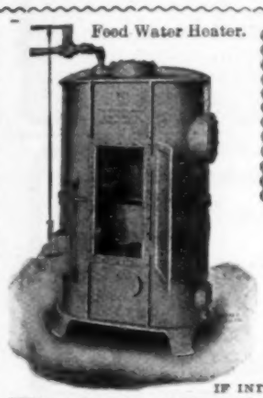

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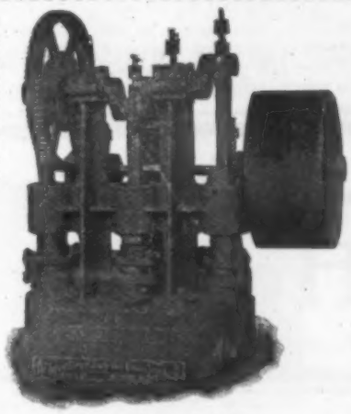

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What Will Make Iron Wear? W. Osborne.
Good Thing for Bench Molders. Illustrated.
Why Foundries Lack Competent Foremen. Wm. H. King.
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Delano Pulley Molding Machine. Illustrated.
Among the Foundries.
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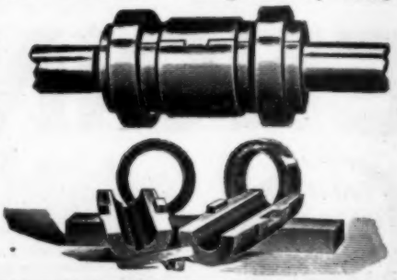

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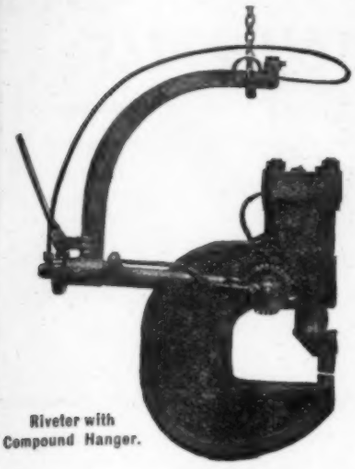

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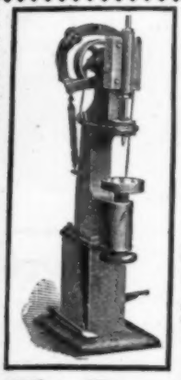

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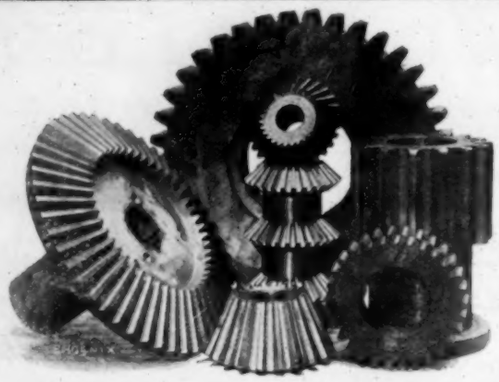

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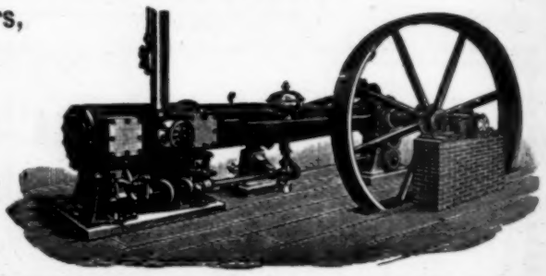

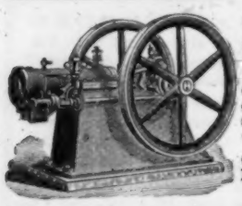

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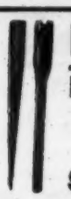

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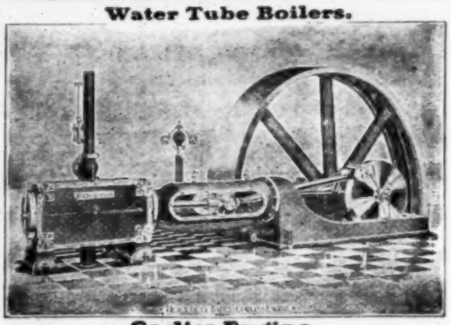

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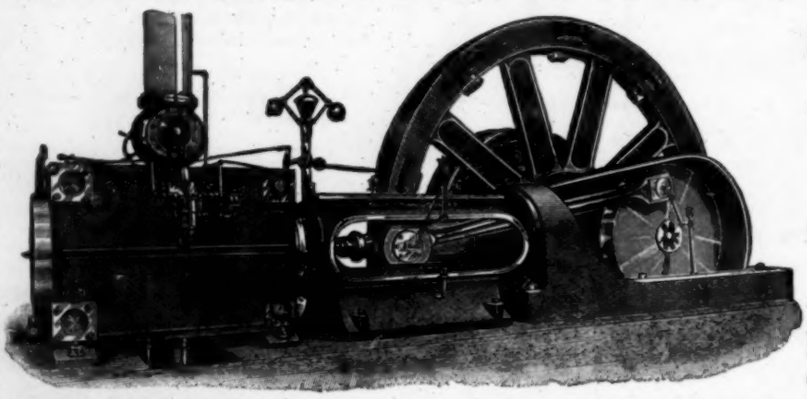

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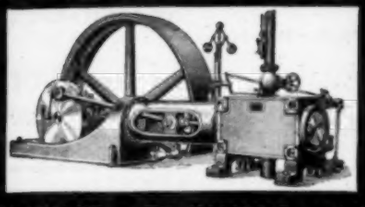

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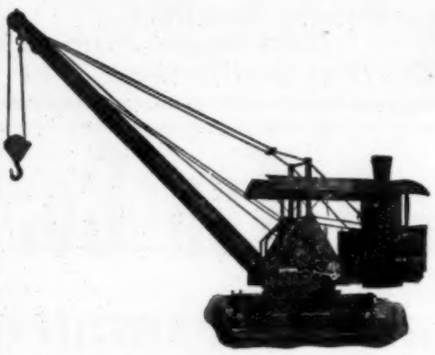

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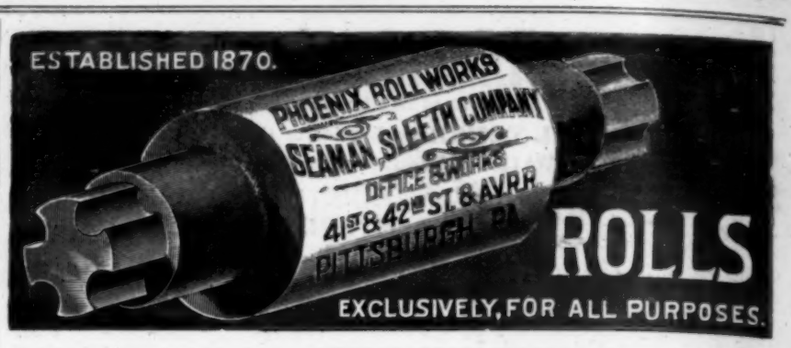

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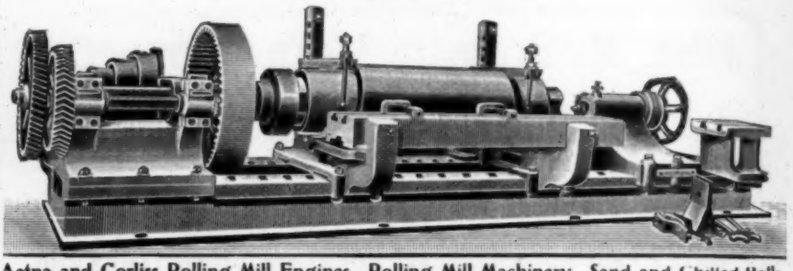

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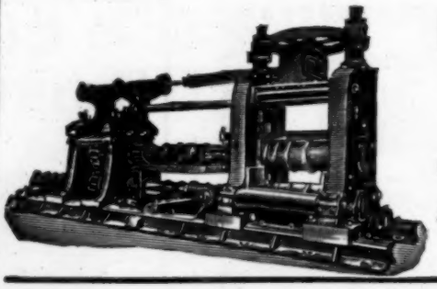

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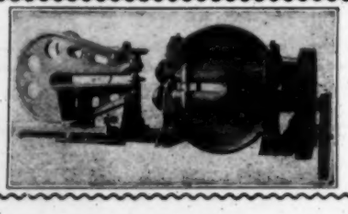

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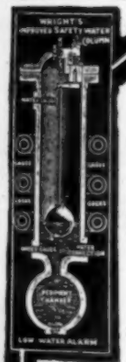

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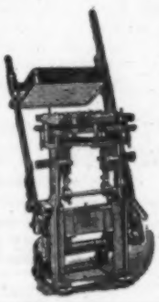

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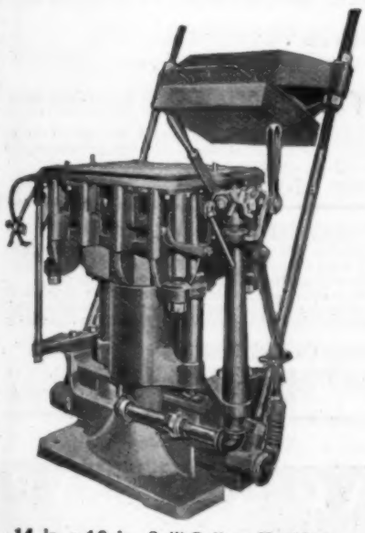

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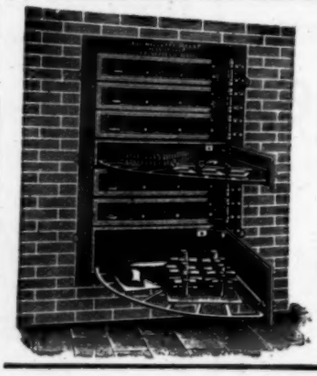

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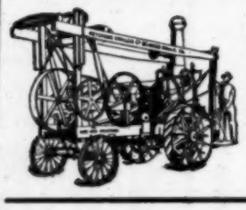

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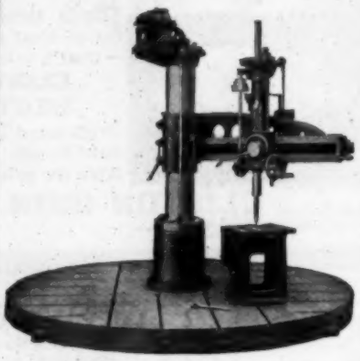

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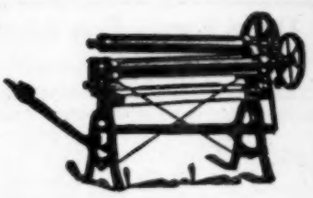

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